Owner's Guide and Installation Instructions

Solar Hiline Water Heater

Install a Rheem

WARNING: Plumber – Be Aware

Use copper pipe ONLY. Plastic pipe MUST NOT be used.

It is a requirement of a solar water heater installation that all pipe work be in copper and not plastic, due to the effects of high water temperatures and pressures.

This water heater must be installed and serviced by a qualified person.
Please leave this guide with the householder.

WARNING: Plumber – Be Aware

- The solar hot and solar cold pipe work between the solar Hiline storage tank and the solar collector(s) are supplied in the pipe kit. The supplied copper solar hot and solar cold pipes **MUST BE** used.

- If the solar water heater is installed either on a metal roof or in a trafficable area, such as on an accessible roof, then the solar hot and solar cold pipes must be insulated. The solar hot and solar cold pipes may be required to be insulated to comply with local regulations.

  If insulation is required, the full length of the solar hot and solar cold pipes **MUST BE** insulated.

  The insulation must:

  - be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions

    The specification of the chosen insulation material should be checked with the insulation manufacturer prior to installation as different materials may vary in temperature tolerance.

  - be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4

  - be weatherproof and UV resistant

  - be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

  The insulation will offer corrosion protection to a metal roof against water runoff over the copper pipe, assist in avoiding accidental contact with the solar pipe work as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

- Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collector(s) under stagnation conditions. The solar collector(s) can generate extremely high water temperatures up to 150°C and high water pressure of 1000 kPa. Plastic pipe cannot withstand these temperatures and pressures and **MUST NOT** be used. Failure of plastic pipe can lead to the release of high temperature water and cause severe water damage and flooding.

- There **must be a continuous fall of a minimum 10°** in the pipe work from the solar Hiline storage tank to the solar collector(s). The highest point of the solar cold pipe and solar hot pipe must be where they connect to the solar Hiline storage tank, otherwise thermosiphoning will not occur.

- A non return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device.

- The solar water heater, including the collector circuit and solar collectors, is to be isolated during the testing and commissioning of the heated water reticulation system in a building, in accordance with Clause 11.1 and 11.3 (a) of AS/NZS 3500.4.

PATENTS
This water heater may be protected by one or more patents or registered designs in the name of Rheem Australia Pty Ltd.

TRADE MARKS
® Registered trademark of Rheem Australia Pty Ltd.
™ Trademark of Rheem Australia Pty Ltd.

Note: Every care has been taken to ensure accuracy in preparation of this publication.
No liability can be accepted for any consequences, which may arise as a result of its application.

CONTENTS

HOUSEHOLDER – We recommend you read pages 4 to 18.

The other pages are intended for the installer but may be of interest.

About Your Water Heater **4**

Regular Care **10**

Water Supplies **13**

Save A Service Call **16**

Installation – Solar Storage Tank **19**

Installation – Solar Collectors **27**

Connections – Plumbing **30**

Connections – Electrical **33**

Multiple Installations **36**

Commissioning **38**

Draining The Solar Collectors **39**

Draining The Water Heater **39**

Flushing The Water Heater **40**

Warranty **43**

ABOUT YOUR WATER HEATER

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

MODEL TYPE

Your Rheem® solar Hiline™ water heater is designed for both the solar collectors and the solar storage tank to be roof mounted. The solar storage tank has a Colorbond jacket and is suitable for installation with Rheem NPT 200 solar collectors.

The system does not have freeze protection. The system is not suitable for installation in areas subject to frost or freeze conditions. Freeze conditions occur below 6°C. The system has NO WARRANTY for freeze damage (refer to "Terms of the Rheem Warranty" on page 43).

This water heater is designed to be installed as an electric boosted solar water heater with its booster heating unit connected to a power supply, however it may be installed with an in-series continuous flow or storage booster.

If this water heater is installed with an in-series booster, then the electric booster heating unit will not be connected to a power supply and the references to the electric booster heating unit, thermostat and boosting controls in this Guide will not be applicable to the installation. For information relating to the function and operation of the in-series booster, refer to the Owners Guide and Installation Instructions supplied with the booster water heater.

SOLAR OPERATION

The Rheem solar Hiline system has its vitreous enamel lined solar storage tank installed on the roof directly coupled to the solar collectors. It works on the simple scientific fact that hot water rises.

As the sun heats the water in the solar collectors, the increase in temperature causes the water to rise through an insulated copper pipe into the storage tank. This allows cooler water from the solar storage tank to flow into the solar collectors to be heated by the sun's energy. This process continues while solar energy is available and until the water in the solar storage tank reaches a temperature of approximately 75°C.

Automatic safety controls are fitted to the water heater to provide safe and efficient operation.

SUNSTAT VALVE

The Sunstat valve limits the water temperature in the solar storage tank to a maximum of approximately 75°C. The valve:

- Limits excessively high (scalding) water temperatures.
- Reduces the discharge of hot water from the temperature pressure relief valve caused by high water temperatures.
- Prevents the over temperature energy cut out on the electric thermostat from activating unnecessarily.

ELECTRIC BOOSTING

Water stored in the solar storage tank can be heated by an electric booster heating unit. The booster heating unit is for heating the water at times of low solar energy gain, such as during very cloudy or rainy weather, or during the colder months. The solar Hiline water heater is suitable for the heating unit to be connected to either a continuous, or a time of use, or an extended Off-Peak (overnight and day) or an Off-Peak (overnight) electricity supply.

The booster heating unit is controlled by an electric thermostat. The thermostat and its over temperature energy cut out are mounted on the solar storage tank behind the side cover. The water temperature is automatically controlled to the thermostat setting when the booster heating unit is energised.

MAINS PRESSURE

The water heater is designed to operate at mains pressure by connecting directly to the mains water supply. If the mains supply pressure in your area exceeds that shown on page 21, a pressure limiting valve must be fitted. The supply pressure should be greater than 350 kPa for true mains pressure operation to be achieved.

HOW HOT SHOULD THE WATER BE?

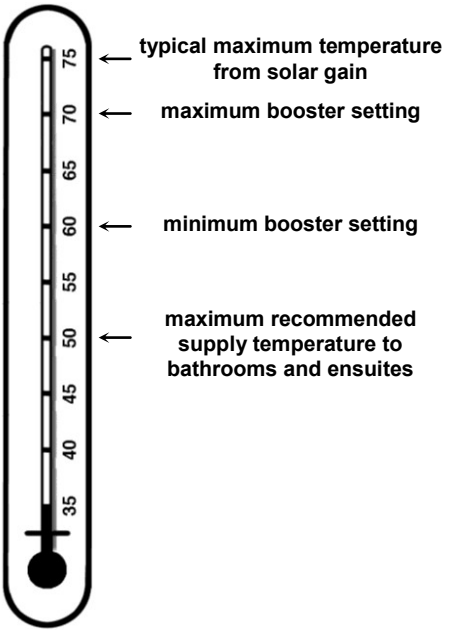
The water heater is fitted with a Rheem Sunstat® valve which limits the solar heated water to a maximum of approximately 75°C.

During periods of low solar energy gain, the water temperature can be boosted by the thermostatically controlled electric booster heating unit. Refer to "Booster Control" on page 7.

Rheem recommends the thermostat is set at 60°C to maximise solar contribution.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the electric booster is energised for a sufficient period each day and the electric booster thermostat setting is 60°C or higher.

If this water heater is installed with an in-series continuous flow gas booster, then this requirement of AS 3498 can be satisfied provided the booster is energised, its preset outlet temperature setting is 70°C or higher and a remote temperature controller is not used.



If this water heater is installed with an in-series storage booster, then this requirement of AS 3498 can be satisfied provided the storage booster is energised and its thermostat setting is 60°C or higher.

HOTTER WATER INCREASES THE RISK OF SCALD INJURY

This water heater can deliver water at temperatures which can cause scalding. Check the water temperature before use, such as when entering a shower or filling a bath or basin, to ensure it is suitable for the application and will not cause scald injury.

We recommend and it may also be required by regulations that an approved temperature limiting device be fitted into the hot water pipe work to the bathroom and ensuite when this water heater is installed. This will keep the water temperature below 50°C at the bathroom and ensuite. The risk of scald injury will be reduced and still allow hotter water to the kitchen and laundry.

TEMPERATURE ADJUSTMENT

The water heater features a tradesperson adjustable thermostat. This requires a licensed tradesperson to make any temperature adjustments. The thermostat has a maximum temperature setting of 70°C and a minimum temperature setting of 60°C.

We advise you have your electrician adjust the thermostat to the lowest setting which meets your needs, especially if there are young children or elderly people in the home. Refer to "Hotter Water Increases the Risk of Scald Injury" on page 5.

⚠ WARNING

This water heater is only intended to be operated by persons who have the experience or the knowledge and the capabilities to do so. This water heater is not intended to be operated by persons with reduced physical, sensory or mental capabilities i.e. the infirm, or by children. Children should be supervised to ensure they do not interfere with the water heater.

This water heater uses 240 V AC power for the electrically operated components. The removal of the side cover will expose 240 V wiring. It must only be removed by a qualified person.

Care should be taken not to touch the pipe work connecting the solar storage tank and the solar collectors. Very high temperature hot water can be generated by the solar collectors under certain conditions and flow through the pipe work from the solar collectors to the solar storage tank.

SAFETY

This water heater is supplied with a thermostat, an over-temperature cut-out, and a combination temperature pressure relief valve. These devices must not be tampered with or removed. The water heater must not be operated unless each of these devices is fitted and is in working order.

The operation of the over-temperature cut-out on the thermostat indicates a possibly dangerous situation. If the over-temperature cut-out operates, it must not be reset and the water heater must be serviced by a qualified person.

If the electrical conduit to the solar storage tank is damaged, it must be replaced by a qualified person in order to avoid a hazard. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

⚠ **Warning:** For continued safety of this water heater it must be installed, operated and maintained in accordance with the Owner's Guide and Installation Instructions.

The Rheem warranty may not cover faults if relief valves or other safety devices are tampered with or if the installation is not in accordance with these instructions.

PRECAUTIONS

Where damage to property can occur in the event of the water heater leaking, the water heater must be installed in a safe tray. Construction, installation and draining of a safe tray must comply with AS/NZS 3500.4 and all local codes and regulatory authority requirements.

The water heater must be maintained in accordance with the Owner's Guide and Installation Instructions. Refer to "Regular Care" on page 10.

If this water heater is to be used where an uninterrupted hot water supply is necessary for your application or business you should ensure that you have back up redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater were to become inoperable for any reason. We recommend you seek advice from your plumber or specifier about your needs and building back up redundancy into your hot water supply system.

TEMPERATURE RUN DOWN

Temperature run down is the reduction in water temperature as the hotter water at the top of the storage cylinder transfers some of its heat to the cooler water in the lower section of the cylinder.

This effect is often perceived as heat loss, but is actually the redistribution of stored heat more evenly over the entire contents of the storage tank. This heat is not lost to the system. This may make it necessary to use the booster to raise the water in the top section of the cylinder back to an acceptable temperature.

Over-night temperature run down is most evident in the morning if the booster switch or time clock is left OFF over-night. It is more prevalent the more hot water is used the night before and also in the cooler months. Day time temperature run down is quite evident on days of lower solar radiation particularly during the cooler months if the power to the booster heating element is not available, or the booster switch or time clock is left OFF.

If higher temperature water is required, particularly in the morning, then use of the booster heating unit is necessary to raise the temperature of the water in the top section of the cylinder. Refer to "Booster Control" on page 7.

BOOSTER CONTROL

An isolating switch is installed in the electrical meter box for the solar storage tank. This should be left switched on to allow the booster heating unit to operate if required. The booster heating unit is for heating the water at times of low solar energy gain, such as during very cloudy or rainy weather, or during the colder months.

The booster heating unit will only activate if heating is required and power is available from the switchboard. When the water is below the thermostat setting, the booster heating unit will turn on and heat the water. The booster heating unit will automatically turn off when the temperature of the water reaches the thermostat setting.

Leaving the isolating switch switched on will also provide a sufficient period of time each day for the booster heating unit to operate, if required, to satisfy the requirements of AS 3498.

The amount of water heated by the raised booster heating unit of the solar Hiline storage tank will be 160 litres (300 litre model), or 80 litres (160 litre model).

Timer Control Switch

A timer control switch can be installed and will help maximise energy savings with an electrically boosted solar water heater connected to a **continuous, time of use or extended Off-Peak (overnight and day)** electricity supply.

If used with an extended Off-Peak (overnight and day) electricity supply, the timer switch should:

- be operated by a continuous power supply on its own circuit from the switchboard with the booster heating unit operated by the Off-Peak power supply.

  A double pole isolating switch is required to be installed at the switchboard to simultaneously isolate both circuits

  or

- be of a type which has an internal rechargeable battery to keep time when the power supply is not available to the timer.

Power must be available to the timer control switch before the booster heating unit can be activated.

The timer control switch should be programmed:

- to suit the hot water consumption pattern of the household,
- with the end of the period to coincide with the commencement of the evening hot water usage,
- to enable a boosting period of not less than the recommended continuous length of time for boosting, and
- for a period when power will be available to the timer.

It may be necessary to program a second period into the timer, such as prior to the morning hot water usage.

Note: When daylight saving time applies, you may consider resetting the timer accordingly.

The recommended continuous length of time for boosting is:

Model	Minimum winter cold water temperature		Temperature rise	Booster heating unit size		
				2.4 kW	3.6 kW	4.8 kW
160	Cool / temperate climate	10°C	50°C	2 hours	1 ½ hours	1 hour
	Temperate / sub tropical climate	15°C	45°C	2 hours	1 ¼ hours	1 hour
	Tropical climate	20°C	40°C	1 ¾ hours	1 ¼ hours	1 hour
300	Cool / temperate climate	10°C	50°C	3 ¾ hours	2 ½ hours	2 hours
	Temperate / sub tropical climate	15°C	45°C	3 ½ hours	2 ¼ hours	1 ¾ hours
	Tropical climate	20°C	40°C	3 hours	2 hours	1 ½ hours

The recommended boosting periods are sufficient to allow the booster heating unit to heat up the boost volume of the solar storage tank to 60°C where the winter cold water temperatures do not fall below those shown. This may be necessary during periods of very low solar energy gain through the solar collectors, such as during constant rain or extremely cloudy weather, particularly in winter when the incoming cold water temperature is lower. The period will also provide a sufficient heat up time for the electric booster to operate, if required, to satisfy the requirements of AS 3498.

The booster heating unit will only activate if heating is required and power is available from the timer. When the water is below the thermostat setting, the booster heating unit will turn on and heat the water. The booster heating unit will automatically turn off either when the temperature of the water reaches the thermostat setting or at the end of the timer period, whichever comes first.

PIPE WORK AND INSULATION

The solar hot and solar cold pipe work between the solar Hiline storage tank and the solar collector(s) are supplied in the pipe kit. The supplied copper solar hot and solar cold pipes **MUST BE** used.

If the solar water heater is installed either on a metal roof or in a trafficable area, such as on an accessible roof, then the solar hot and solar cold pipes must be insulated. The solar hot and solar cold pipes may be required to be insulated to comply with local regulations.

If insulation is required, the full length of the solar hot and solar cold pipes **MUST BE** insulated.

The insulation must:

- be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions

  The specification of the chosen insulation material should be checked with the insulation manufacturer prior to installation as different materials may vary in temperature tolerance.

- be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4

- be weatherproof and UV resistant

- be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

The insulation will offer corrosion protection to a metal roof against water runoff over the copper pipe, assist in avoiding accidental contact with the solar pipe work as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collectors under certain conditions (refer to Warning on page 29).

The pipe work between the solar storage tank and in-series booster (if one is installed) **MUST BE** of copper and fully insulated with a closed cell type insulation or equivalent (minimum thickness 13 mm).

TO TURN OFF THE WATER HEATER

If you plan to be away from home for a few nights, we suggest you leave the water heater switched on.

If it is necessary to turn off the water heater:

- Switch off the electrical supply at the isolating switch to the solar storage tank.
- Close the cold water isolation valve at the inlet to the water heater.

TO TURN ON THE WATER HEATER

- Open the cold water isolation valve fully at the inlet to the water heater.
- Switch on the electrical supply at the isolating switch to the solar storage tank.
- Check and if required reset the timer, if one is installed.

GOING ON HOLIDAYS

If you plan to be away from home, conserve energy by switching the booster switch "OFF". Refer to "To Turn Off The Water Heater" on page 9. Also if the system is not used for a period in excess of 4 weeks it is recommended the solar collectors be covered.

HOW DO I KNOW IF THE WATER HEATER IS INSTALLED CORRECTLY?

Installation requirements are shown on pages 25 to 26, 36 and 37. The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements.

In New Zealand, the installation must also conform with Clause G12 of the New Zealand Building Code.

VICTORIAN CUSTOMERS

Notice to Victorian Customers from the Victorian Plumbing Industry Commission. This water heater must be installed by a licensed person as required by the Victorian Building Act 1993.

Only a licensed person will give you a Compliance Certificate, showing that the work complies with all the relevant Standards. Only a licensed person will have insurance protecting their workmanship for 6 years. Make sure you use a licensed person to install this water heater and ask for your Compliance Certificate.

DOES THE WATER CHEMISTRY AFFECT THE WATER HEATER?

The water heater is suitable for most public water supplies, however some water chemistries may have detrimental effects on the water heater, its components and fittings. Refer to "Water Supplies" on page 13.

If you are in a known harsh water area or you are not sure of your water chemistry, have your water checked against the conditions described on pages 13 to 15.

HOW LONG WILL THE WATER HEATER LAST?

The water heater is supported by a manufacturer's warranty (refer to page 43). There are a number of factors that will affect the length of service the water heater will provide. These include but are not limited to the water chemistry, the water pressure, the water temperature (inlet and outlet) and the water usage pattern. Refer to "Precautions" on page 6.

REGULAR CARE

MINOR SIX MONTH MAINTENANCE

It is recommended minor maintenance be performed every six months by the dwelling occupant.

The minor maintenance includes:

- Operate the easing lever on the temperature pressure relief valve (if accessible). It is very important you pull the cord to operate the lever gently. Refer to "Temperature Pressure Relief Valve" on page 11.

  If the pull cord does not operate correctly and the relief valve lever is not readily and safely accessible, contact Rheem Service or their nearest Accredited Service Agent. Do not attempt to climb onto a non trafficable roof to operate the relief valve lever.

  ⚠ **Warning:** Exercise care to avoid any splashing of water, as water discharged from the drain line will be hot. Stand clear of the drain line's point of discharge when operating the valve's lever.

- Operate the easing lever on the expansion control valve (if fitted). It is very important you raise and lower the lever gently. Refer to "Expansion Control Valve" on page 11.
- Check the drain line from the safe tray (if one is installed) is not blocked.

MAJOR FIVE YEAR SERVICE

It is recommended a major five year service be conducted on the water heater.

⚠ **Warning**: Servicing of a water heater must only be carried out by a qualified person. Phone Rheem Service or their nearest Accredited Service Agent.

Note: The five year service and routine replacement of any components, such as the anode and relief valves, are not included in the Rheem warranty. A charge will be made for this work. Only genuine replacement parts should be used on this water heater.

The major service includes the following actions:

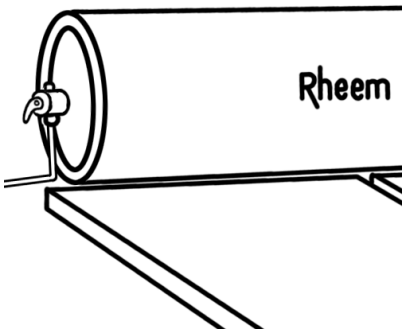
- Replace the temperature pressure relief valve.
- Inspect and flush the expansion control valve (if fitted). If required, replace the valve.
- Inspect and if required, replace the anode.

  If the anode is not replaced, it should be replaced within three years of this service (refer to "Anode Inspection and Replacement" on page 14).

- Check the booster heating unit for excessive calcium build up or corrosion and replace if necessary.
- Clean the collector glass.
- Visually check the unit for any potential problems.
- Inspect all connections.
- Check the drain line from the safe tray (if one is installed) is not blocked.

Note: The solar storage tank may need to be drained during this service. After the completion of the service, the solar storage tank will take some time to reheat the water by solar gain. Depending upon the power supply connection to the booster heating unit, hot water may not be available until the next day.

TEMPERATURE PRESSURE RELIEF VALVE

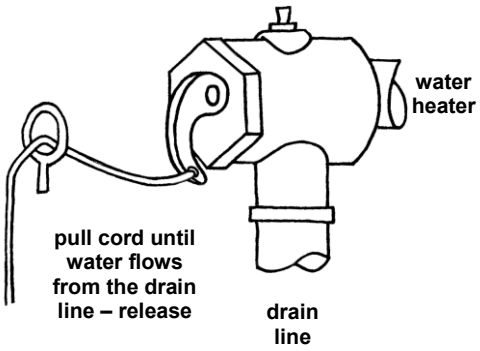


This valve is near the top of the water heater and is essential for its safe operation. It is possible for the valve to release a little water through the drain line during each heating period. This occurs as the water is heated and expands by approximately 1/50 of its volume.

Continuous leakage of water from the valve and its drain line may indicate a problem with the water heater (refer to "Temperature Pressure Relief Valve Running" on page 17).

⚠ **Warning:** Never block the outlet of this valve or its drain line for any reason.

Operate the easing lever on the temperature pressure relief valve once every six months. This is achieved by gently pulling the cord attached to the lever. **It is very important you pull and release the cord gently.**



⚠ **DANGER:** Failure to do this may result in the water heater cylinder failing, or under certain circumstances, exploding.

⚠ **Warning:** Exercise care to avoid any splashing of water, as water discharged from the drain line will be hot. Stand clear of the drain line's point of discharge when operating the valve's lever.

If water does not flow freely from the drain line when the lever is lifted, then the water heater must be checked. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

The temperature pressure relief valve should be replaced at intervals not exceeding 5 years, or more frequently in areas where there is a high incidence of water deposits (refer to "Water Supplies" on page 13).

EXPANSION CONTROL VALVE

In many areas, including South Australia, Western Australia and scaling water areas, an expansion control valve is fitted to the cold water line to the water heater. The expansion control valve may discharge a small quantity of water from its drain line during the heating period instead of the temperature pressure relief valve on the water heater.

Operate the easing lever on the expansion control valve once every six months. **It is very important you raise and lower the lever gently.** The expansion control valve should be checked for performance or replaced at intervals not exceeding 5 years, or more frequently in areas where there is a high incidence of water deposits.

COLLECTOR GLASS

Ensure the glass on your solar collectors is free of dust, salt spray or any other matter, which may reduce the effectiveness of the solar collectors. If the collector glass becomes dirty, hose down or if the solar collectors are accessible, wash the collector glass with water and a soft brush when the solar collectors are cool.

Have any trees trimmed which may shade the solar collectors.

Rheem solar collectors have passed the AS/NZS 2712 requirements for resistance to hailstone damage, so it is not normally necessary to fit a guard to a collector. Stone Guards are available to provide a level of protection to the collectors against vandalism or accidental damage. Refer to your local Solar Distributor for details.

FLUSHING THE SOLAR COLLECTORS

It may be necessary to flush the solar collectors if there is sediment in the water supply. This should be conducted by a person qualified to do so and in the morning within three hours of sunrise, when the water temperature inside the solar collector(s) is lower.

⚠ **Warning:** Care must be exercised to avoid splashing of water, as water discharged from the solar collector(s) and solar storage tank may be of a very high temperature.

It is recommended to have the solar collectors flushed every five years. This will assist in keeping the solar collectors, solar cold pipe and solar hot pipe clear of sediment.

WATER SUPPLIES

This water heater must be installed in accordance with this advice to be covered by the Rheem warranty.

This water heater is manufactured to suit the water conditions of most public reticulated water supplies. However, there are some known water chemistries which can have detrimental effects on the water heater and its operation and/or life expectancy. If you are unsure of your water chemistry, you may be able to obtain information from your local water supply authority. This water heater should only be connected to a water supply which complies with these guidelines for the Rheem warranty to apply.

CHANGE OF WATER SUPPLY

The changing or alternating from one water supply to another can have a detrimental effect on the operation and / or life expectation of a water heater cylinder, a temperature pressure relief valve, a heating unit and a solar collector in a direct solar water heater system.

Where there is a changeover from one water supply to another, e.g., a rainwater tank supply, bore water supply, desalinated water supply, public reticulated water supply or water brought in from another supply, then water chemistry information should be sought from the supplier or it should be tested to ensure the water supply meets the requirements given in these guidelines for the Rheem warranty to apply.

ANODE

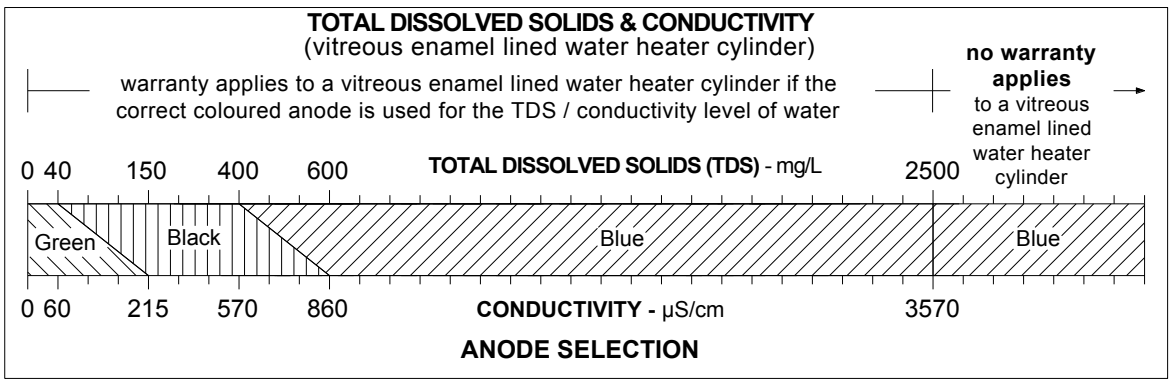
The vitreous enamel lined cylinder of the water heater is only covered by the Rheem warranty when the total dissolved solids (TDS) content in the water is less than 2500 mg/L and when the correct colour coded anode is used. If an incorrect colour coded anode is used in the water heater, any resultant faults will not be covered by the Rheem warranty. In addition, the use of an incorrect colour coded anode may shorten the life of the water heater cylinder.

The correct colour coded anode must be selected and fitted to the water heater in accordance with the following advice and the Anode Selection chart on page 13 for the Rheem warranty to apply to the water heater cylinder.

Total Dissolved Solids	Anode colour code
0 – 40 mg/L	Green
40 – 150 mg/L	Green or Black
150 – 400 mg/L	Black
400 – 600 mg/L	Black or Blue
600 – 2500 mg/L	Blue
2500 mg/L +	Blue (no cylinder warranty)

The changing of an anode must be carried out by a qualified person.

Note: Some water analysis reports may state the conductivity of the water rather than the level of total dissolved solids. Conductivity, measured in microsiemens per centimetre (μS / cm), is directly proportional to the TDS content of the water. TDS, in mg / L, is approximately 70% of the conductivity in μS / cm.


TOTAL DISSOLVED SOLIDS & CONDUCTIVITY
(vitreous enamel lined water heater cylinder)
warranty applies to a vitreous enamel lined water heater cylinder if the correct coloured anode is used for the TDS / conductivity level of water
no warranty applies
to a vitreous enamel lined water heater cylinder
0 40 150 400 600
TOTAL DISSOLVED SOLIDS (TDS) - mg/L
2500
Green
Black
Blue
Blue
0 60 215 570 860
CONDUCTIVITY - µS/cm
3570
ANODE SELECTION

ANODE INSPECTION AND REPLACEMENT

The anode installed in a vitreous enamel lined steel water heater cylinder will slowly dissipate whilst protecting the cylinder. The life of the cylinder may be extended by replacing the anode.

If the anode is not replaced during a five year service (refer to "Major Five Year Service" on page 10) then the maximum time after installation when the anode should be replaced is 8 years.

For water supplies which are either softened, desalinated or where the water supply may alternate between a water tank and a reticulated public supply or another supply, it is recommended the anode be replaced within 5 years of installation.

CAUTION

If the water supply has a TDS greater than 150 mg/L and a green anode has not been changed to a black anode, or if the TDS is greater than 600 mg/L and the anode has not been changed to a blue anode, there is the possibility the anode may become overactive and hydrogen gas could accumulate in the top of the water heater during long periods of no use.

If, under these conditions, the water heater has not been used for two or more weeks the following procedure should be carried out before using any electrical appliances (automatic washing machines and dishwashers) which are connected to the hot water supply.

The hydrogen, which is highly flammable, should be vented safely by opening a hot tap and allowing the water to flow. There should be no smoking or naked flame near the tap whilst it is turned on. Any hydrogen gas will be dissipated. This is indicated by an unusual spurting of the water from the tap. Once the water runs freely, any hydrogen in the system will have been released.

SATURATION INDEX

The saturation index is used as a measure of the water's corrosive or scaling properties.

In a corrosive water supply, the water can attack copper parts and cause them to fail.

Where the saturation index is less than –1.0, the water is very corrosive and the Rheem warranty does not apply to a copper sheathed heating unit or a solar collector in a direct solar water heater system. A corrosion resistant heating unit must be used for the Rheem warranty to apply to the heating unit.

In a scaling water supply calcium carbonate is deposited out of the water onto any hot metallic surface.

Where the saturation index exceeds +0.40, the water is very scaling. An expansion control valve must be fitted on the cold water line after the non-return valve to protect and for the Rheem warranty to apply to the temperature pressure relief valve and water heater cylinder. Solar collectors in a direct solar water heater system should be covered when the water heater is not intended to be used for more than two weeks.

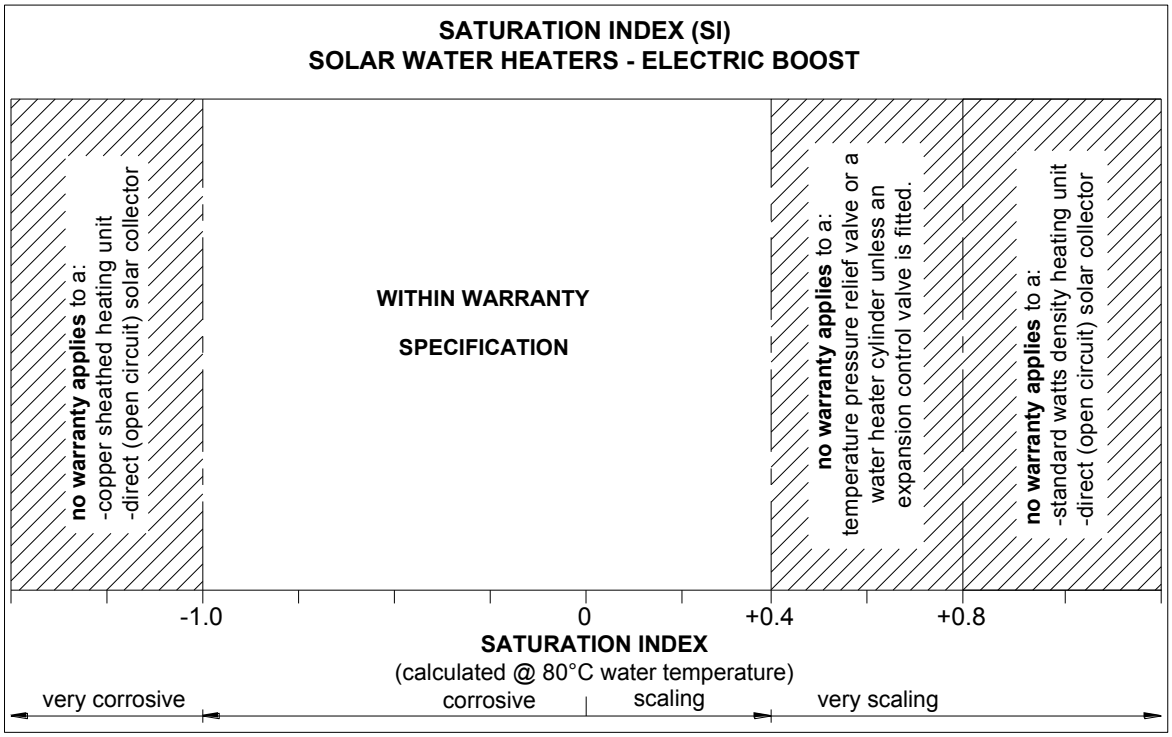
Where the saturation index exceeds +0.80, the Rheem warranty does not apply to a standard watts density heating unit or a solar collector in a direct solar water heater system. A low watts density heating unit must be used for the Rheem warranty to apply to the heating unit.

Water which is scaling may be treated with a water softening device to reduce the saturation index of the water.

Refer to the Saturation Index chart on page 15.

Contact Rheem Service or their nearest Accredited Service Agent if a replacement heating unit is required.

Refer to the cold water connection detail on page 30 for the position of the expansion control valve.



SUMMARY OF WATER CHEMISTRY ADVICE AFFECTING WARRANTY

The water heater, solar collectors and their components are not suitable for certain water chemistries. Those chemistries are listed below. If the water heater is connected at any time to a water supply with the following water chemistry, the Rheem warranty will not cover any resultant faults on the components listed below:

Water Chemistry	**Component**
Total Dissolved Solids (TDS) > 2500 mg/L	water heater cylinder
Total Dissolved Solids (TDS) not suitable for anode type	water heater cylinder
Saturation Index (SI) < -1.0	solar collector copper sheathed heating unit
Saturation Index (SI) > +0.4 (if an expansion control valve is not fitted)	water heater cylinder temperature pressure relief valve
Saturation Index (SI) > +0.8	solar collector standard watts density heating unit

SAVE A SERVICE CALL

Check the items below before making a service call. You will be charged for attending to any condition or fault that is not related to manufacture or failure of a part.

NOT ENOUGH HOT WATER (OR NO HOT WATER)

This can occur with new installations and is normally related to some misunderstandings as to the use of the booster heating unit.

- **Insufficient sunlight**
  Insufficient sunlight due to cloudy weather during hotter months or low solar energy contribution in colder months may mean the booster heating unit is required to boost more often.

  Ensure the booster heating unit is being used as advised. Refer to "Booster Control" on page 7.

- **Booster heating unit not operating**
  Inspect the isolating switch marked "HOT WATER" or "WATER HEATER" at the switchboard and ensure it is turned "ON".

  Check the timer (if one is installed) and it's settings to ensure power is available to the booster heating unit.

  Note: Check the electricity supply to which the unit is connected. If on an Off-Peak or time controlled electricity supply remember heating hours are restricted.

  Check the fuse marked "HOT WATER" or "WATER HEATER" at the switchboard.

- **Collectors shaded**
  If trees or other objects shade the solar collectors or if the glass is dirty, the effectiveness of the solar collectors will be greatly reduced. Have the trees trimmed or the solar collectors relocated if the obstruction is permanent or clean the collector glass (refer to "Collector Glass" on page 11).

- **Collector area is too small**
  For most installations, the number of solar collectors recommended in the Rheem literature has been proven to provide the required solar energy to meet the average family needs.

- **Are you using more hot water than you think?**
  Is one outlet (especially the shower) using more hot water than you think?

  Very often it is not realised the amount of hot water used, particularly when showering. Carefully review the family's hot water usage. As you have installed an energy saving appliance, energy saving should also be practised in the home. Adjust your water usage pattern to take advantage of maximum solar gains.

  Have your plumber install a flow control valve to each shower outlet to reduce water usage.

- **Temperature pressure relief valve running**
  Is the relief valve discharging too much water?

  Refer to "Temperature Pressure Relief Valve Running" on page 17.

- **Thermostat setting**
  Ensure the thermostat setting is appropriate. You may choose to have your electrician adjust the thermostat upwards to gain additional hot water capacity when boosting. Refer to "Temperature Adjustment" on page 5.

  ⚠ **Warning:** Hotter water increases the risk of scald injury.

- **Water heater size**
  Do you have the correct size water heater for your requirements?

  The sizing guides in the sales literature and on the Rheem website (www.rheem.com.au) suggest average sizes that may be needed.

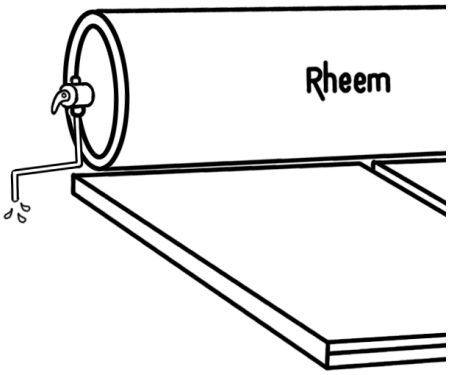
WATER NOT HOT ENOUGH

You may find that due to heavy hot water usage or low solar energy gain the water temperature may be lower than normally expected. Ensure the booster is being used as advised. If a timer is installed, you will need to carefully plan your use of the booster heating unit to boost the water temperature on such occasions. Refer to "Booster Control" on page 7.

A lower water temperature may also be noticed in the morning when the booster heating unit has not been energised overnight. This in particular may be experienced during periods of low solar energy gain and can be caused by the transfer of heat energy overnight to the cold water in the lower portion of the storage tank, or if there has been heavy hot water usage the previous night.

TEMPERATURE PRESSURE RELIEF VALVE RUNNING

- **Normal Operation**
  It is normal and desirable this valve allows a small quantity of water to escape during the heating cycle. However, if it discharges more than a bucket full of water in 24 hours, there may be another problem.



- **Continuous dribble**
  Try gently raising the easing lever on the relief valve for a few seconds (refer to "Temperature Pressure Relief Valve" on page 11). This may dislodge a small particle of foreign matter and clear the fault. Release the lever gently.

- **Steady flows for long period (often at night)**
  This may indicate the mains water pressure sometimes rises above the designed pressure of the water heater. Ask your installing plumber to fit a pressure limiting valve.

  ⚠ **Warning:** Never replace the relief valve with one of a higher pressure rating.

- **Heavy flows of hot water until the water heater is cold - then stops until water reheats**
  The water heater **must** be switched off at the isolating switch or switchboard. Phone Rheem Service or their nearest Accredited Service Agent to arrange for an inspection.

EXPANSION CONTROL VALVE RUNNING

If an expansion control valve is fitted in the cold water line to the water heater (refer to page 30) it may discharge a small quantity of water instead of the temperature pressure relief valve on the water heater. The benefit is that energy is conserved as the discharged water is cooler.

COLLECTOR GLASS

The Rheem warranty **DOES NOT** cover breakage of solar collector glass. Check your household insurance policy covers collector glass breakage.

⚠ **Warning:** No attempt should be made to remove or replace broken collector glass.

The collector glass is not offered as a replacement part. Should the solar collector require replacement, contact Rheem Service or their nearest Accredited Service Agent.

HIGHER THAN EXPECTED ELECTRICITY BILLS

With the installation of your new solar hot water system, maximum electrical energy savings can be achieved with careful planning of hot water usage. Should you at any time feel your electricity account is higher than expected, we suggest you check the following points:

- Is the relief valve running excessively?

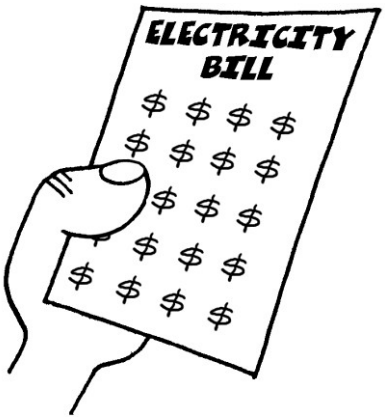
  Refer to "Temperature Pressure Relief Valve Running" on page 17.

- Is one outlet (especially the shower) using more hot water than you think?

  Refer to "Not Enough Hot Water" on page 16.

- Is there a leaking hot water pipe, dripping hot water tap, etc?

  Even a small leak will waste a surprising quantity of hot water and energy. Replace faulty tap washers, and have your plumber rectify any leaking pipe work.



- Are you using the booster heating unit properly?

  Refer to "Booster Control" on page 7.

- Has there been an increase in hot water usage?

  An increase in hot water usage may result in an increase in booster operation.

- Has your water heating tariff rate been increased by your electricity retailer since your previous account?

ELECTRICITY TARIFFS

The electricity tariff to which your solar water heater is connected will play an important role in the overall effectiveness of the system. It is important you are aware of this tariff to enable you to take full advantage of the boosting period, i.e. Domestic / Continuous or Time of Use, Extended Off-Peak (overnight and day) or extended time controlled, or Off-Peak (overnight) or time controlled.

IF YOU HAVE CHECKED ALL THE FOREGOING AND STILL BELIEVE YOU NEED ASSISTANCE, PHONE RHEEM SERVICE OR THEIR NEAREST ACCREDITED SERVICE AGENT.

INSTALLATION – SOLAR STORAGE TANK

THIS WATER HEATER IS NOT SUITABLE FOR POOL HEATING.

The system is suitable for installation with Rheem NPT 200 solar collectors.

IMPORTANT NOTES

- Working on roofs is and should always be considered a hazardous activity, particularly early in the morning, late in the evening, when the roof is wet or during and after periods of rain.
- All work must be carried out in accordance with Local, State and Federal Occupational Safety, Health and Welfare Regulations. In particular, the requirements for safety whilst manual lifting, working at heights and on roofs.
- Installers must be competently trained in:
  - Height Hazard Assessment
  - Working at Height Procedures
  - Assessment / Use / Wearing of correct height safety equipment (harnesses etc.)
  - All other relevant safety factors specific to the installation and maintenance work to be compliant with suitable Occupational, Health and Safety Regulations / Codes.
- All relevant permits shall be obtained from the regulatory authorities before commencing work to install the solar hot water system.
- All work carried out must be performed by appropriately qualified tradespeople or be suitably supervised for trades assistant duties.
- Every care must be taken to protect and warn occupants of the building and the public from personal injury which may occur from falling tools, roof materials, fittings or any other hazards of a general nature.
- Advise the occupants of any inconvenience which may occur due to disconnection of existing water and electrical supplies.
- The connection, attachment, integration or general association of other equipment or parts which either directly or indirectly affect the operation or performance of this equipment could void the Rheem warranty.
- All packaging materials must be removed from the solar storage tank prior to its installation. Refer to the warning on page 28 in relation to the removal of the solar collector packaging.

NO FREEZE PROTECTION

The system does not have freeze protection. The system is not suitable for installation in areas subject to frost or freeze conditions. Freeze conditions occur below 6°C. The system has NO WARRANTY for freeze damage (refer to "Terms of the Rheem Warranty" on page 43).

INSTALLATION STANDARDS

The water heater must be installed:

- by a qualified person, and
- in accordance with the installation instructions, and
- in compliance with Standards AS/NZS 3500.4, AS/NZS 3000 and all local codes and regulatory authority requirements.

In New Zealand, the installation must also conform with Clause G12 of the New Zealand Building Code.

WATER HEATER APPLICATION

This water heater is designed for use in a single family domestic dwelling for the purpose of heating potable water. Its use in an application other than this may shorten its life.

If this water heater is to be used where an uninterrupted hot water supply is necessary for the application or business, then there should be redundancy within the hot water system design. This should ensure the continuity of hot water supply in the event that this water heater was to become inoperable for any reason. We recommend you provide advice to the system owner about their needs and building backup redundancy into the hot water supply system.

This water heater is designed to be installed as an electric boosted solar water heater with its booster heating unit connected to a power supply, however it may be installed with an in-series continuous flow or storage booster.

If this water heater is installed with an in-series booster, then the electric booster heating unit will not be connected to a power supply and the references to the electric booster heating unit, thermostat and boosting controls in these installation instructions will not be applicable to the installation.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the electric booster is energised for a sufficient period each day and the electric booster thermostat setting is 60°C or higher.

If this water heater is installed with an in-series continuous flow gas booster, then this requirement of AS 3498 can be satisfied provided the booster is energised, its preset outlet temperature setting is 70°C or higher and a remote temperature controller is not used.

If this water heater is installed with an in-series storage booster, then this requirement of AS 3498 can be satisfied provided the storage booster is energised and its thermostat setting is 60°C or higher.

SOLAR WATER HEATER STORAGE TANK LOCATION

The solar storage tank is designed to be installed on the roof directly coupled to the solar collector(s). The solar water heater should be installed close to the most frequently used outlet and its position chosen with safety and service in mind. The solar water heater should be installed with a north facing aspect (refer to “Solar Collector Location” on page 27).

Clearance must be allowed for servicing of the solar storage tank. Make sure the temperature pressure relief valve lever is accessible and the side cover, thermostat and booster heating unit can be removed for service. You must be able to read the information on the rating plate. If possible leave side room of one water heater length so the anode can be inspected or replaced.

Remember you may have to remove the entire solar storage tank later for servicing. The solar storage tank must be capable of being removed without structural alteration to the building or major alteration to the piping.

For a single water heater installation, follow the diagrams on pages 25 to 26. For multiple water heater installations, follow the instructions on pages 36 and 37.

The solar storage tank must be installed horizontally level. Remember all local authorities have regulations about putting water heaters into roof spaces.

SAFE TRAY

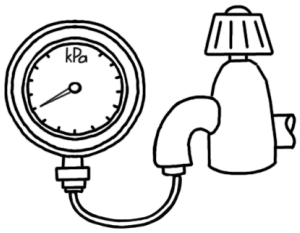
Where damage to property can occur in the event of the water heater leaking, the water heater must be installed in a safe tray. Construction, installation and draining of a safe tray must comply with AS/NZS 3500.4 and all local codes and regulatory authority requirements. AS/NZS 3500.4 also has particular requirements when a safe tray must be installed.

MAINS WATER SUPPLY

Where the mains water supply pressure exceeds that shown in the table below, an approved pressure limiting valve is required and should be fitted as shown in the installation diagram (refer to diagram on page 30).

Model	**160, 300**
Relief valve setting	1000 kPa
Expansion control valve setting *	850 kPa
Max. mains supply pressure	
With expansion control valve	680 kPa
Without expansion control valve	800 kPa

* Expansion control valve not supplied with the water heater



TANK WATER SUPPLY

If the water heater is supplied with water from a tank supply and a pressure pump system is not installed, then the bottom of the supply tank must be at least 1 m above the highest point of the hot water plumbing system, including the water heater. Care must be taken to avoid air locks. The cold water line to the water heater should be adequately sized and fitted with a full flow gate valve or ball valve.

HOT WATER DELIVERY

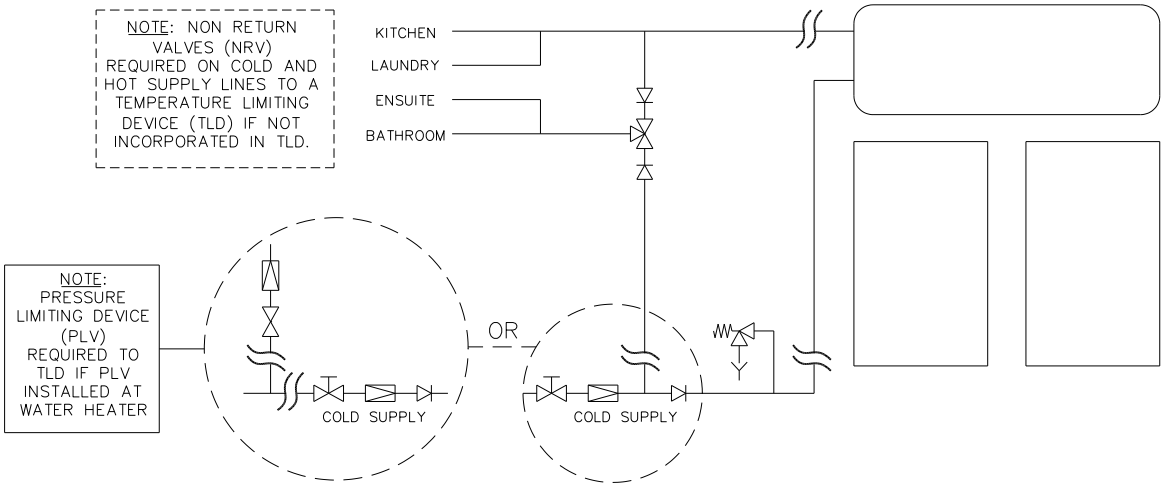
This water heater can deliver water at temperatures which can cause scalding.

It is necessary and we recommend that a temperature limiting device be fitted between the water heater and the hot water outlets in any ablution area such as a bathroom or ensuite, to reduce the risk of scalding. The installing plumber may have a legal obligation to ensure the installation of this water heater meets the delivery water temperature requirements of AS/NZS 3500.4 so that scalding water temperatures are not delivered to a bathroom, ensuite or other ablution area.

The temperature limiting device used with a solar water heater should have a specified 'minimum temperature differential' between the hot water inlet and the tempered water outlet of no greater than 10°C. Refer to the specifications of the temperature limiting device.

Where a temperature limiting device is installed adjacent to the solar water heater, the cold water line to the temperature limiting device can be branched off the cold water line either before or after the isolation valve and pressure limiting valve to the solar storage tank, but it **MUST BE** before the non return valve. If an expansion control valve is required, it must always be installed after the non return valve and be the last valve prior to the solar storage tank.

⚠ **Warning:** A non return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device.


NOTE: NON RETURN VALVES (NRV) REQUIRED ON COLD AND HOT SUPPLY LINES TO A TEMPERATURE LIMITING DEVICE (TLD) IF NOT INCORPORATED IN TLD.
KITCHEN
LAUNDRY
ENSUITE
BATHROOM
NOTE: PRESSURE LIMITING DEVICE (PLV) REQUIRED TO TLD IF PLV INSTALLED AT WATER HEATER
OR
COLD SUPPLY
COLD SUPPLY

Two Temperature Zones Using a Temperature Limiting Device

If a pressure limiting valve is installed on the cold water line to the solar water heater and the cold water line to a temperature limiting device branches off before this valve or from another cold water line in the premises, then a pressure limiting valve of an equal pressure setting may be required prior to the temperature limiting device.

If a combination isolation valve and non return valve (duo or trio valve) is installed on the cold water line to the solar water heater and the cold water line to the temperature limiting device branches off after this valve, then a second non return valve must be installed between the cold water branch and the solar storage tank.

CIRCULATED HOT WATER FLOW AND RETURN SYSTEM

A solar water heater should not be installed as part of a circulated hot water flow and return system in a building. The benefits of solar gain will be significantly reduced and energy gained from the sun lost through the pipe work.

If a circulated flow and return system is required, it is necessary to bypass the solar water heater and install a secondary water heater connected to the hot water flow and return line and supplied from the solar water heater. The secondary water heater must be a storage water heater able to provide a hot water outlet temperature of at least 60°C. **Note:** The thermostat must always be set to at least 60°C. Refer to the diagram on page 22.

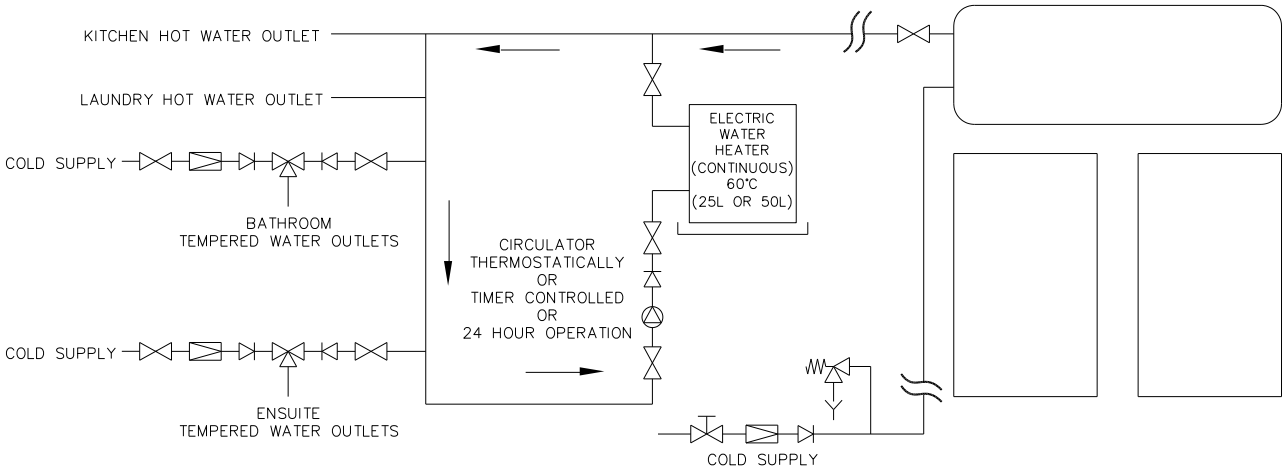
Temperature Limiting Device

A temperature limiting device cannot be installed in circulated hot water flow and return pipe work. The tempered water from a temperature limiting device cannot be circulated. Where a circulated hot water flow and return system is required in a building, a temperature limiting device can only be installed on a dead leg, branching off the circulated hot water flow and return pipe.

If circulated tempered water were to be returned back to the water heater, depending on the location of the return line connection on the water supply line to the water heater, then either:

- water will be supplied to the cold water inlet of the temperature limiting device at a temperature exceeding the maximum recommended water supply temperature, or
- when the hot taps are closed no water will be supplied to the cold water inlet of the temperature limiting device whilst hot water will continue to be supplied to the hot water inlet of the temperature limiting device.

These conditions may result in either water at a temperature exceeding the requirements of AS/NZS 3500.4 being delivered to the hot water outlets in the ablution areas, or the device closing completely and not delivering water at all, or the device failing. Under either condition, the operation and performance of the device cannot be guaranteed.



Circulated Hot Water Flow and Return System – Solar Water Heater

REDUCING HEAT LOSSES

The cold water line to and the hot water line from the water heater must be insulated in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed.

The pipe work between the solar storage tank and the solar collectors may be required to be insulated. Refer to "Warning: Plumber Be Aware" on page 29.

ANODE

The vitreous enamel lined cylinder of the water heater is only covered by the Rheem warranty when the total dissolved solids (TDS) content in the water is less than 2500 mg/L and when the correct colour coded anode is used. If an incorrect colour coded anode is used in the water heater, any resultant faults will not be covered by the Rheem warranty. In addition, the use of an incorrect colour coded anode may shorten the life of the water heater cylinder.

The correct colour coded anode for the water supply being used must be selected and fitted to the water heater for the Rheem warranty to apply to the water heater cylinder (refer to "Water Supplies" on page 13 and the Anode Selection chart on page 13). The black anode is typically fitted as standard.

Total Dissolved Solids	Anode colour code
0 – 40 mg/L	Green
40 – 150 mg/L	Green or Black
150 – 400 mg/L	Black
400 – 600 mg/L	Black or Blue
600 – 2500 mg/L	Blue
2500 mg/L +	Blue (no cylinder warranty)

If the water supply has a TDS greater than 150 mg/L and a green anode has not been changed to a black anode, or if the TDS is greater than 600 mg/L and the anode has not been changed to a blue anode, there is the possibility the anode may become overactive and hydrogen gas could accumulate in the top of the water heater during long periods of no use. In areas where this is likely to occur, the installer should instruct the householder on how to dissipate the gas safely (refer to "Caution" on page 14).

SADDLING - PIPE WORK

To prevent damage to the cylinder when attaching pipe clips or saddles to the water heater jacket, we recommend the use of self-drilling screws with a maximum length of 13 mm. Should pre drilling be required, extreme caution must be observed when penetrating the jacket of the water heater.

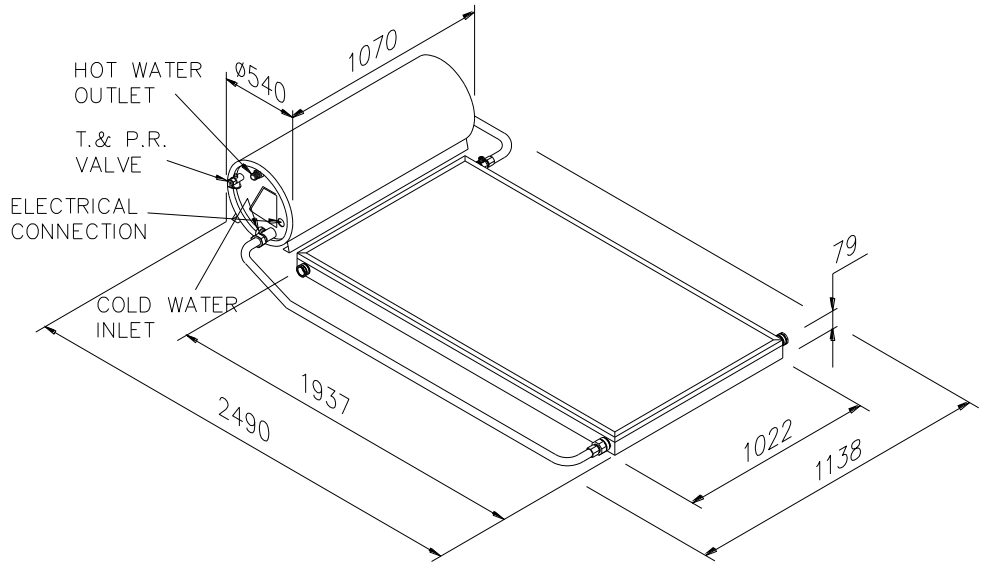
Note: If the cylinder is damaged as a result of attaching pipe clips or saddles to the jacket, any resultant faults will not be covered by the Rheem warranty.

BOOSTER HEATING UNIT

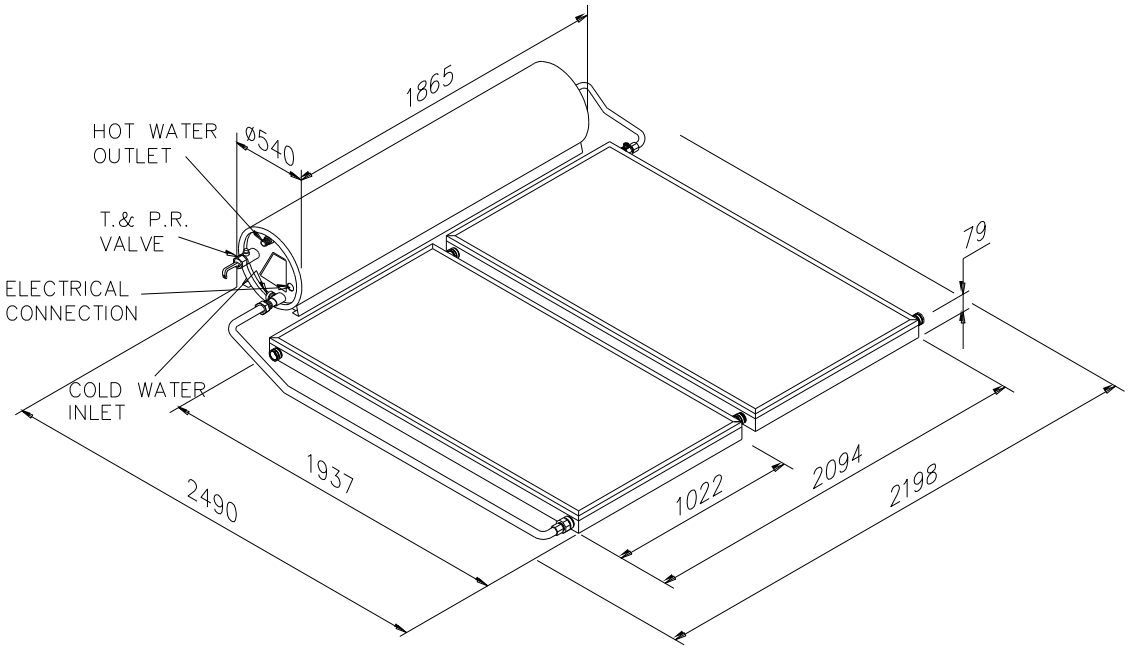
The booster heating unit provides hot water during periods of low solar gain. This can be connected to either a continuous, or a time of use, or an extended Off-Peak (overnight and day) or an Off-Peak (overnight) electricity supply. Boosting can be controlled via a timer. Refer to "Booster Control" on page 33.

If this water heater is installed with an in-series booster, then the electric booster heating unit in the solar storage tank will not need to be connected to a power supply.

DIMENSIONS AND TECHNICAL DATA



160 Litre

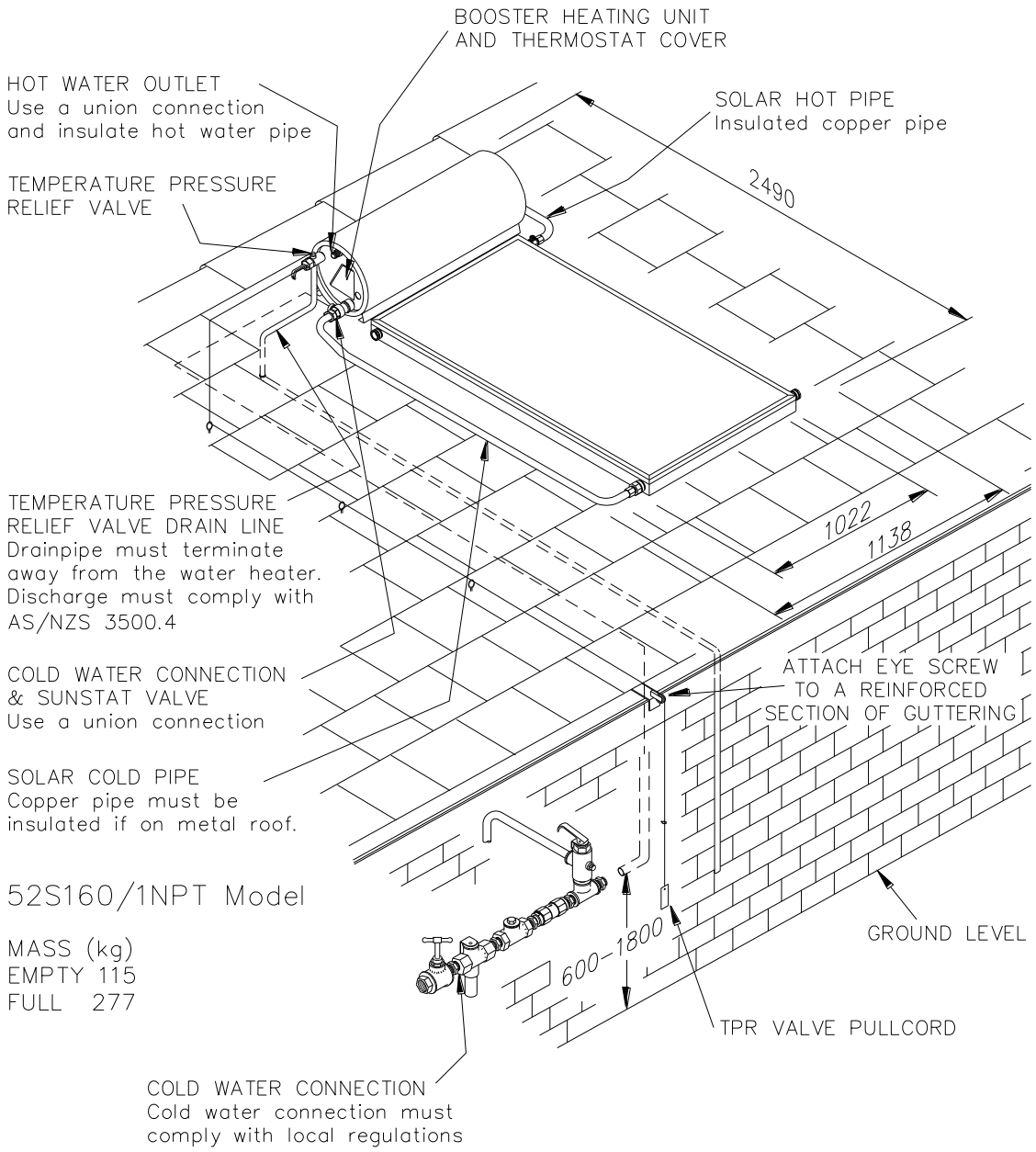


300 Litre

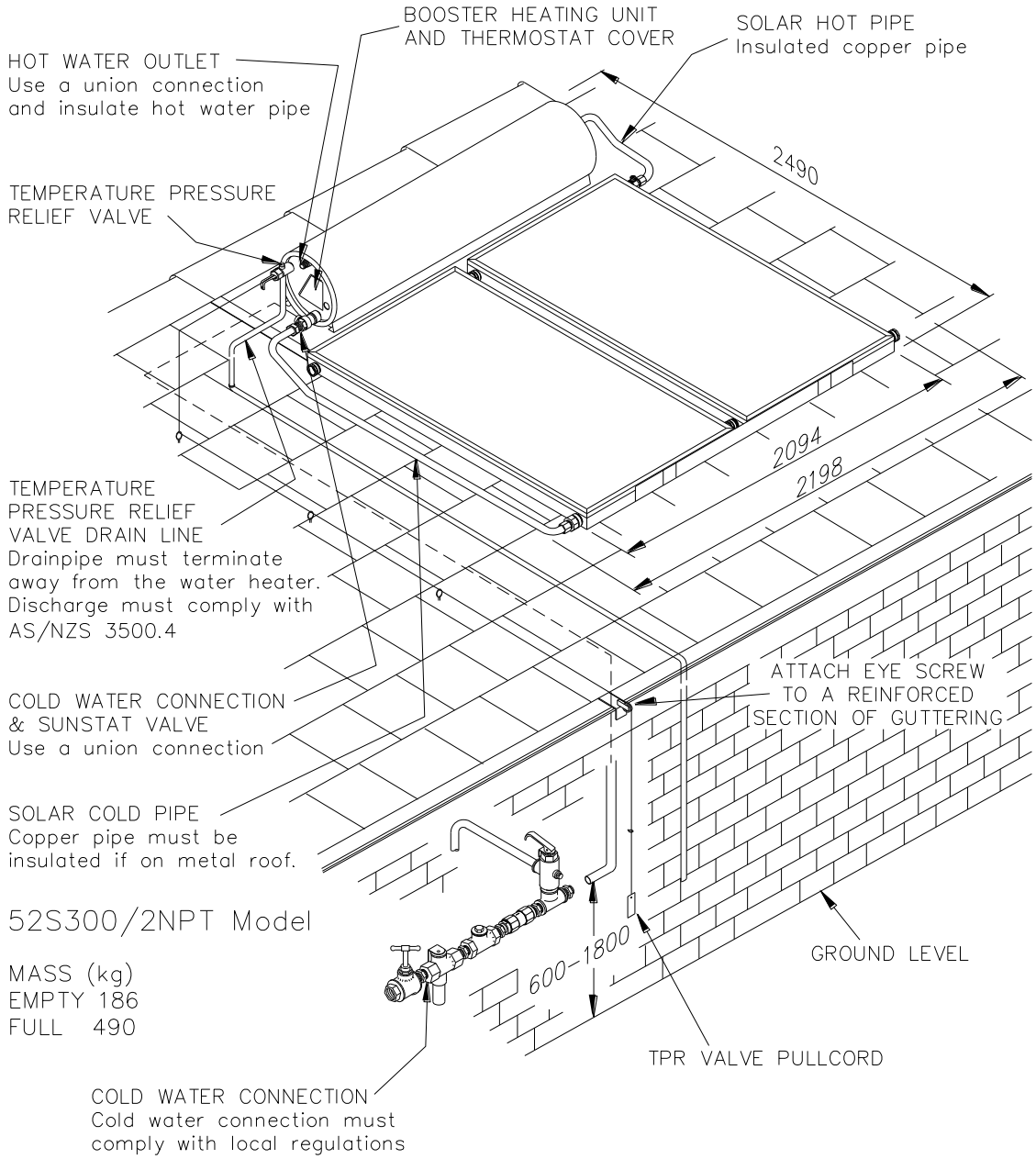
Solar Storage Tank (kg)			Solar Collector(s) (kg)		Pipe Kit (kg)	System (kg)
Capacity	Empty	Full	Empty	Full	-	Full
160 litre	70	230	39	41	6	277
300 litre	100	400	78	82	8	490

Technical data is subject to change.

TYPICAL INSTALLATION – SOLAR HILINE 160



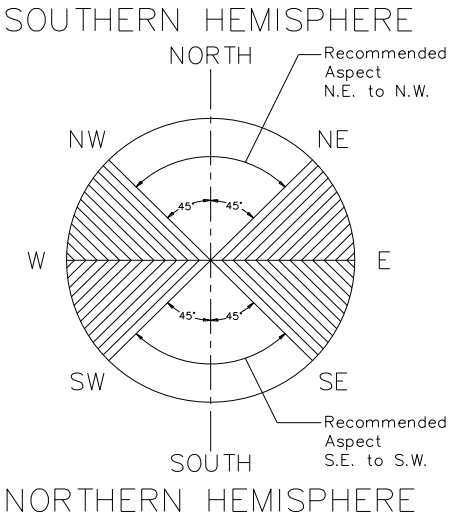
TYPICAL INSTALLATION – SOLAR HILINE 300



INSTALLATION – SOLAR COLLECTORS

SOLAR COLLECTOR LOCATION

- The solar collectors must be installed in a shade free position.
- The surrounding vicinity should be checked for higher buildings or trees which may cause shade at other times of the year and for small trees which may grow and shade the solar collectors in the future.
- For optimum performance, the solar collectors should be installed facing towards the equator (i.e. north facing in the southern hemisphere and south facing in the northern hemisphere). ALWAYS CHECK ORIENTATION WITH A COMPASS. Where this orientation is not practical, a system facing up to 45° from the equator will receive about 4% less total solar radiation.



- For optimum performance, inclination of the solar collectors should be approximately equal to 90% of the local latitude angle. The latitudes of some Australian cities are listed on page 28. The thermosiphon solar water heater may be installed at the roof angle for simplicity of installation and appearance, but must never be less than 10° from the horizontal. If the roof angle varies by 15° from the optimum angle, the solar collectors will receive about 10% less total solar radiation.
- The water heater is suitable for installations with an inclination of up to 30°. Where the solar water heater is installed at inclinations greater than 30°, a With Pitch frame is necessary. Refer to your local Solar Distributor for details.
- For a solar Hiline installation on a roof with a pitch less than 10°, a Fixed Pitch frame is required. Refer to your local Solar Distributor for details.
- For an installation of a thermosiphon solar water heater on a pitched roof in a cyclonic or high wind area, a suitable With Pitch frame is required. Refer to your local Solar Distributor for details.
- The installation of this solar water heater on a suitable frame, subject to the frame's design criteria not being exceeded:
  - is suitable for installation in geographic locations up to and within Wind Region D (With Pitch frame) or up to and within Wind Region C (Fixed Pitch frame), as defined in the Building Code of Australia, Australian / New Zealand Standard AS/NZS 1170.2:2002 and the Australian Standard AS 4055-2006, and
  - also provides an acceptable method of installation where it is necessary to satisfy the requirements of the Building Code of Australia and AS/NZS 3500.4 Clause 6.5.3.4 for high wind areas.
- The installer must ensure the structural integrity of the building is not compromised by the installation of the solar water heater and the roof structure is suitable to carry the full weight of the solar storage tank and the solar collector(s). If in doubt the roof structure should be suitably strengthened. Consult a structural engineer.
- The storage tanks, when full of water, weigh approximately 400 kg (300 litre) and 230 kg (160 litre). Each solar collector and its fittings weighs approximately 45 kg when full of water.
- The installation must comply with the requirements of AS/NZS 3500.4 and all local codes and regulatory authority requirements.

LATITUDE OF SOME AUSTRALIAN CITIES

Adelaide	35°S	Cairns	17°S	Hobart	42°S	Port Hedland	20°S
Alice Springs	24°S	Canberra	35°S	Mildura	34°S	Rockhampton	24°S
Brisbane	27°S	Darwin	12°S	Melbourne	38°S	Sydney	34°S
Broken Hill	31°S	Geraldton	28°S	Perth	32°S	Townsville	19°S

SOLAR HOT AND SOLAR COLD PIPE CONNECTIONS

Refer to the installation instructions supplied with the pipe kit for connection details of the solar hot and solar cold pipes.

Roof area required:

300 L x 2 collectors – 2.5 m wide x 2.5 m deep. Weight (full) 490 kg approx.

160 L x 1 collector – 1.4 m wide x 2.5 m deep. Weight (full) 277 kg approx.

Notes:

- All plumbing work must be carried out by a qualified person and in accordance with the National Plumbing Standard AS/NZS 3500.4 and local authority requirements. In New Zealand, the installation must conform with Clause G12 of the New Zealand Building Code.
- Pipe work, including that within the roof space, is to be securely fixed to prevent vibration.
- These solar collectors have passed the AS/NZS 2712 requirements for resistance to hailstone damage, so it is not normally necessary to fit a guard to a collector. Stone Guards are available to provide a level of protection to the collectors against vandalism or accidental damage. Refer to your local Solar Distributor for details.
- ⚠ **Warning:** Do not remove the solar collector packaging completely, prior to the installation as the solar collector surface can become very hot. Remove only sufficient packaging material to enable the installation of the solar collectors.

  Upon completion of the installation of the solar water heater the packaging material may be removed from the NPT 200 solar collectors, whether or not the solar water heater is commissioned.

  The solar collector packaging must be removed completely prior to the permanent operation of the water heater.
- All connectors, end plugs, ‘O’ rings, brass fittings, collector straps, collector angle and Sunstat valve required for the installation are included with the pipe kit.

  Suitable screws or anchors will be required to fix the collector straps to the rafters for a pitched roof installation.

  ⚠ **Warning:** Where straps, frames, etc. are secured to roof members, all fixings must be of an appropriate type to suit the type of member. Inadequate or inappropriate fixings may result in straps becoming unsecured and the installation of the solar hot water system becoming unsafe.

  Refer to the installation instructions supplied with the pipe kit for details on the installation of the solar collectors and the connecting pipe work.
- Use thread sealing tape or an approved thread sealant on all fittings.
- If the storage tank is being installed with existing solar collector(s), then utilise the existing Sunstat valve, fittings and pipes used on the installation.

WARNING: Plumber – Be Aware

- The solar hot and solar cold pipe work between the solar Hiline storage tank and the solar collector(s) are supplied in the pipe kit. The supplied copper solar hot and solar cold pipes **MUST BE** used.

- If the solar water heater is installed either on a metal roof or in a trafficable area, such as on an accessible roof, then the solar hot and solar cold pipes must be insulated. The solar hot and solar cold pipes may be required to be insulated to comply with local regulations.

  If insulation is required, the full length of the solar hot and solar cold pipes **MUST BE** insulated.

  The insulation must:

  - be of a closed cell type or equivalent, suitable for a solar water heating application and capable of withstanding the temperature of the water generated by the solar collectors under stagnation conditions

    The specification of the chosen insulation material should be checked with the insulation manufacturer prior to installation as different materials may vary in temperature tolerance.

  - be at least 13 mm thick, however thicker insulation may be required to comply with the requirements of AS/NZS 3500.4

  - be weatherproof and UV resistant

  - be fitted up to and cover the connections on both the solar storage tank and the solar collectors.

  The insulation will offer corrosion protection to a metal roof against water runoff over the copper pipe, assist in avoiding accidental contact with the solar pipe work as high temperature water can flow from the solar collectors to the solar storage tank and also reduce pipe heat losses.

- Plastic pipe **MUST NOT** be used, as it will not withstand the temperature and pressure of the water generated by the solar collector(s) under stagnation conditions. The solar collector(s) can generate extremely high water temperatures up to 150°C and high water pressure of 1000 kPa. Plastic pipe cannot withstand these temperatures and pressures and **MUST NOT** be used. Failure of plastic pipe can lead to the release of high temperature water and cause severe water damage and flooding.

- There **must be a continuous fall of a minimum 10°** in the pipe work from the solar Hiline storage tank to the solar collector(s). The highest point of the solar cold pipe and solar hot pipe must be where they connect to the solar Hiline storage tank, otherwise thermosiphoning will not occur.

- A non return valve **MUST BE** installed on the cold water line to the solar storage tank **AFTER** the cold water branch to a temperature limiting device.

- The solar water heater, including the collector circuit and solar collectors, is to be isolated during the testing and commissioning of the heated water reticulation system in a building, in accordance with Clause 11.1 and 11.3 (a) of AS/NZS 3500.4.

CONNECTIONS – PLUMBING

All plumbing work must be carried out by a qualified person and in accordance with the requirements of the Standard AS/NZS 3500.4, and all local codes and regulatory authority requirements. In New Zealand, the installation must conform with Clause G12 of the New Zealand Building Code.

⚠ **Warning:** Certain types of plastic pipe, such as Poly-butylene pipe, are not suitable to be used as a hot water pipe between:

- this water heater and a temperature limiting device, and
- this water heater and a hot water outlet if a temperature limiting device is not installed.

This water heater can produce water at a temperature and pressure which can exceed the performance limits of these types of pipe. This may result in pipe failure leading to severe water damage to the property. If one of these types of plastic pipe is used as a hot water pipe in the property, then a temperature limiting device must be installed between the water heater and this pipe work.

Note: The solar storage tank of a solar water heater should not be installed as part of a circulated hot water flow and return system in a building. The benefits of solar gain will be significantly reduced and energy gained from the sun lost through the pipe work. If a circulated flow and return system is required, it is necessary to connect the return line after the solar storage tank and prior to the in-series water heater supplied from the solar water heater. Refer to "Circulated Hot Water Flow and Return System" on page 22.

CONNECTION SIZES

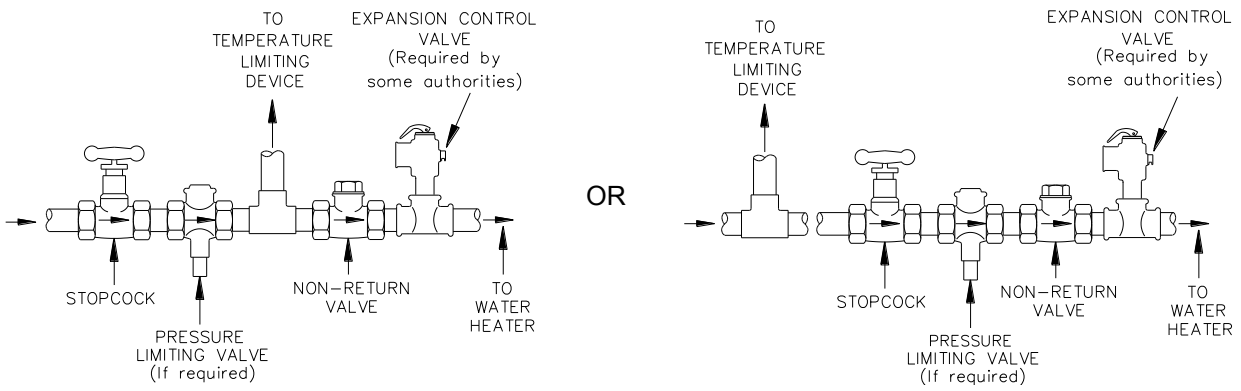
- Hot water connection: RP¾/20.
- Cold water connection: G½B.
  (Sunstat valve connection to tank: RP1¼/32).
- Relief valve connection: RP½/15.

WATER INLET AND OUTLET

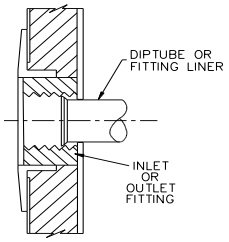
All pipe work must be cleared of foreign matter before connection and purged before attempting to operate the water heater. All olive compression fittings must use brass or copper olives. Use thread sealing tape or approved thread sealant on all fittings.

An isolation valve and non return valve must be installed on the cold water line to the water heater. An acceptable arrangement is shown in the diagram and on page 37 for multiple installations. Refer also to "Hot Water Delivery" on page 21 and to "Mains Water Supply" on page 21.

The cold water isolation valve and expansion control valve, if one is installed, must be accessible from ground or floor level. A position of up to 1800 mm above ground or floor level is recommended. They must not be installed either on the roof or in the ceiling space, unless it is an accessible trafficable area. Extend the cold water line to the cold water inlet fitting on the Sunstat valve.



A disconnection union must always be provided at the cold water inlet to the Sunstat valve and hot water outlet on the water heater to allow for disconnection of the water heater.



This water heater has either a plastic dip tube or fitting liner in the inlet and outlet fittings (see diagram). These must be in place for the water heater to function properly. Do not remove or damage them by using heat nearby. They will be pushed into the correct position as the fitting is screwed in.

Exposed pipe work between the solar storage tank and the penetrations through the roofing material should be kept to a minimum to maintain the aesthetics of the installation.

Pipes must not be installed in direct contact with metal roofs. Where it is necessary to run piping across a metal roof, it must be fixed above the roof and surrounded with a weatherproof insulation of a minimum thickness in accordance with Clause 4.12.3 of AS/NZS 3500.4. The insulation must be UV resistant if exposed. The insulation is to assist in freeze protection and to protect the metal roof against corrosion by water runoff over the copper pipe. Consideration should be made for thermal expansion and contraction of the roof material.

Notes:

- Penetrations through the roofing material must be:
  - at the high point of the roof tile or metal sheet;
  - made neatly and kept as small as practicable;
  - waterproofed upon installation of the hot and cold pipes.

PIPE SIZES

To achieve true mains pressure operation, the cold water line to the water heater should be the same size or bigger than the hot water line from the water heater.

The pipe sizing for hot water supply systems should be carried out by persons competent to do so, choosing the most suitable pipe size for each individual application. Reference to the technical specifications of the water heater and local regulatory authority requirements must be made.

IN-SERIES BOOSTER (IF INSTALLED)

The pipe work between the solar storage tank and an in-series booster has a minimum recommended pipe size of DN20, **MUST BE** of copper and be fully insulated with a closed cell type insulation or equivalent and in accordance with the requirements of AS/NZS 3500.4. The insulation must be weatherproof and UV resistant if exposed. The insulation must be fitted up to the connections on both the solar storage tank and the in-series booster. An isolation valve must be installed on the water line to the in-series booster. The isolation valve must be of a full flow type if the in-series booster is a continuous flow water heater.

TEMPERATURE PRESSURE RELIEF VALVE

The temperature pressure relief valve is shipped in a plastic bag attached to the side of the water heater. The temperature pressure relief valve must be fitted before the water heater is operated. Before fitting the relief valve, make sure the probe has not been bent. Seal the thread with Teflon tape - never hemp. Make sure the tape does not hang over the end of the thread.

Screw the valve into the correct opening (refer to the installation diagrams on pages 25 to 26) leaving the valve drain pointing downwards. Do not use a wrench on the valve body - use the spanner flats provided. A copper drain line must be fitted to the temperature pressure relief valve (refer to "Relief Valve Drain" on page 32).

Attach the pull cord supplied to the easing lever of the temperature pressure relief valve and extend to a suitable operating position using the eye screws supplied. Attach the eye screws to a reinforced section of the guttering or other suitable location (refer to the installation diagrams on pages 25 to 26).

The valve must be insulated with closed cell polymer insulation or similar (minimum thickness 9 mm) and the insulation installed so as not to impede the operation of the valve. The insulation must be weatherproof and UV resistant if exposed.

EXPANSION CONTROL VALVE

Local regulations may make it mandatory to install an expansion control valve (ECV) in the cold water line to the water heater. In other areas, an ECV is required if the saturation index is greater than +0.4 (refer to "Water Supplies" on page 13).

The expansion control valve must always be installed after the non return valve and be the last valve installed prior to the water heater (refer to diagrams on page 30). A copper drain line must be fitted to the expansion control valve (refer to "Relief Valve Drain" on page 32).

The expansion control valve and it's easing gear must be accessible from ground or floor level. A position of up to 1800 mm above ground or floor level is recommended. It must not be installed either on the roof or in the ceiling space, unless it is an accessible trafficable area. Extend the cold water line from the expansion control valve to the cold water inlet fitting on the Sunstat valve.

The valve must be insulated with closed cell polymer insulation or similar (minimum thickness 9 mm) and the insulation installed so as not to impede the operation of the valve. The insulation must be weatherproof and UV resistant if exposed.

RELIEF VALVE DRAIN

DN15 copper drain lines must be fitted to the temperature pressure relief valve and expansion control valve (if one is installed) to carry the discharge clear of the water heater. Connect the drain lines to the valves using disconnection unions. The drain line from the valve to the point of discharge should be as short as possible, have a continuous fall all the way from the water heater to the discharge outlet and have no tap, valves or other restrictions in the pipe work.

A drain line from a relief valve must comply with the requirements of AS/NZS 3500.4. A drain line must be no longer than 9 metres with no more than three bends greater than 45° before discharging at an outlet or air break. The maximum length of 9 metres for a drain line is reduced by 1 metre for each additional bend required of greater than 45°, up to a maximum of three additional bends. Where the distance to the point of final discharge exceeds this length, the drain line can discharge into a tundish.

Subject to local regulatory authority approval, the drain lines from the temperature pressure relief valve and expansion control valve from an individual water heater may be interconnected.

The outlet of a drain line must be in such a position that flow out of the pipe can be easily seen, but arranged so discharge will not cause injury, damage or nuisance. The termination point of a drain line must comply with the requirements of AS/NZS 3500.4. Drain lines must not discharge into a safe tray.

In locations where water pipes are prone to freezing, drain lines must be insulated, must not exceed 300 mm in length and are to discharge into a tundish through an air gap of between 75 mm and 150 mm.

If a drain line discharges into a tundish, the drain line from the tundish must be not less than DN20. The drain line from a tundish must meet the same requirements as for a drain line from a relief valve.

Where a drain line crosses over a metal roof, the pipe work must be fully insulated with weatherproof lagging to offer corrosion protection to the metal roof against water runoff over the copper pipe. The insulation must be UV resistant if exposed.

For multiple installations the drain lines from several water heaters can discharge into a common tundish (refer to "Multiple Installations" on pages 36 and 37).

⚠ **Warning:** As the function of the temperature pressure relief valve on this water heater is to discharge high temperature water under certain conditions, it is strongly recommended the pipe work downstream of the relief valve be capable of carrying water exceeding 93°C. Failure to observe this precaution may result in damage to pipe work and property.

INSTALLATION CHECK LIST

Once the installation is completed and the system is full of water, it is IMPORTANT to check the following:

- Right hand side of the collector array is 20 – 35 mm (one solar collector) or 40 – 70 mm (two solar collectors) higher than the left. If in doubt use a spirit level.
- The solar hot and solar cold pipes grade downwards from the storage tank to the solar collector(s). If in doubt use a spirit level.

CONNECTIONS – ELECTRICAL

The power supply to the water heater must not be switched on until the water heater is filled with water and a satisfactory megger reading is obtained.

All electrical work and permanent wiring must be carried out by a qualified person and in accordance with the Wiring Rules AS/NZS 3000 and all local codes and regulatory authority requirements.

If this water heater is installed with an in-series booster, then the electric booster heating unit will not need to be connected to a power supply and the references to the electric booster heating unit, thermostat and boosting controls in these installation instructions will not be applicable to the installation.

Note: AS 3498 requires that a water heater provides the means to inhibit the growth of Legionella bacteria in potable water. This water heater can satisfy this AS 3498 requirement provided the electric booster is energised for a sufficient period each day and the electric booster thermostat setting is 60°C or higher.

SOLAR STORAGE TANK

The solar storage tank with an electric booster heating unit must be directly connected to a 240 V AC 50 Hz mains power supply with an isolating switch installed at the switchboard.

The power supply can be either a continuous, or a time of use, or an extended Off-Peak (overnight and day) or an Off-Peak (overnight) electricity supply. Discuss the power supply requirements with the householder.

A flexible 20 mm conduit is required for the electrical cable to the solar storage tank. The conduit is to be connected to the unit with a 20 mm terminator. Connect the power supply wires directly to the terminal block and earth tab connection, ensuring there are no excess wire loops inside the front cover.

THERMOSTAT SETTING

The thermostat is adjustable from 60°C to 70°C. The thermostat is adjusted by turning the adjuster anticlockwise to decrease the temperature setting and clockwise to increase the temperature setting. Only adjust the temperature setting when the isolating switch is switched off at the switchboard.

For reasons of safety and economy, we advise the thermostat be set at the lowest temperature that will provide sufficient hot water during periods when boosting is required. Rheem recommends the thermostat is set at 60°C to maximise solar contribution. Discuss the thermostat setting requirements with the householder.

BOOSTER CONTROL

The isolating switch installed in the electrical meter box for the solar storage tank should be left switched on.

Leaving the isolating switch switched on will also provide a sufficient period of time each day for the booster heating unit to operate, if required, to satisfy the requirements of AS 3498.

Timer Control Switch

A suitably rated timer control switch can be installed and will help maximise energy savings with an electrically boosted solar water heater connected to a **continuous, time of use or extended Off-Peak (overnight and day)** electricity supply.

If used with an extended Off-Peak (overnight and day) electricity supply, the timer switch should:

- be operated by a continuous power supply on its own circuit from the switchboard with the booster heating unit operated by the Off-Peak power supply.

  A double pole isolating switch is required to be installed at the switchboard to simultaneously isolate both circuits.

  or

- be of a type which has an internal rechargeable battery to keep time when the power supply is not available to the timer.

Power must be available to the timer control switch before the booster heating unit can be activated.

The timer control switch should be programmed:

- to suit the hot water consumption pattern of the household,
- with the end of the period to coincide with the commencement of the evening hot water usage,
- to enable a boosting period of not less than the recommended continuous length of time for boosting, and
- for a period when power will be available to the timer.

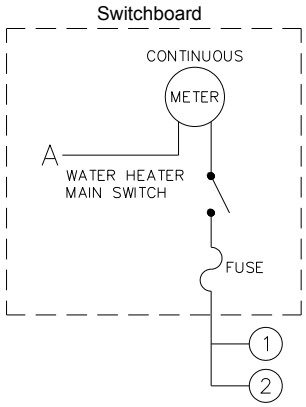
It may be necessary to program a second period into the timer, such as prior to the morning hot water usage. Check with the householder.

The recommended continuous length of time for boosting is:

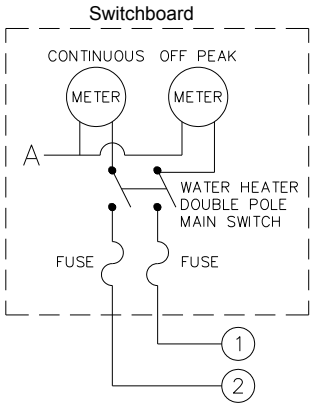
				Booster heating unit size		
Model	Minimum winter cold water temperature		Temperature rise	2.4 kW	3.6 kW	4.8 kW
160	Cool / temperate climate	10°C	50°C	2 hours	1 ½ hours	1 hour
	Temperate / sub tropical climate	15°C	45°C	2 hours	1 ¼ hours	1 hour
	Tropical climate	20°C	40°C	1 ¾ hours	1 ¼ hours	1 hour
300	Cool / temperate climate	10°C	50°C	3 ¾ hours	2 ½ hours	2 hours
	Temperate / sub tropical climate	15°C	45°C	3 ½ hours	2 ¼ hours	1 ¾ hours
	Tropical climate	20°C	40°C	3 hours	2 hours	1 ½ hours

The recommended boosting periods are sufficient to allow the booster heating unit to heat up the boost volume of the solar storage tank to 60°C where the winter cold water temperatures do not fall below those shown. This may be necessary during periods of very low solar energy gain through the solar collectors, such as during constant rain or extremely cloudy weather, particularly in winter when the incoming cold water temperature is lower. The period will also provide a sufficient heat up time for the electric booster to operate, if required, to satisfy the requirements of AS 3498.

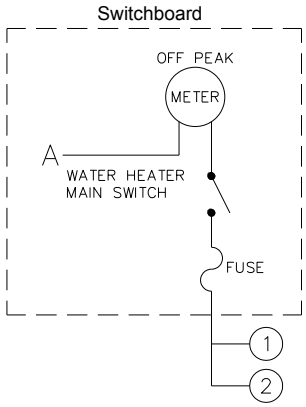
TIMER CONTROL SWITCH WIRING DIAGRAM



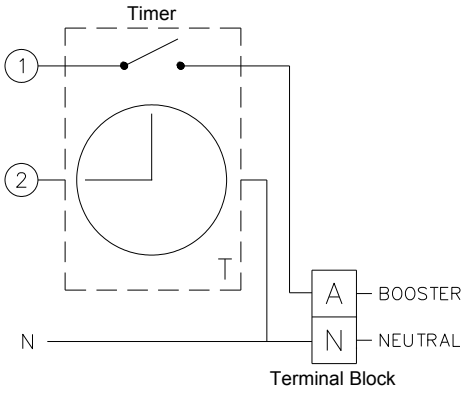
CONTINUOUS
POWER SUPPLY



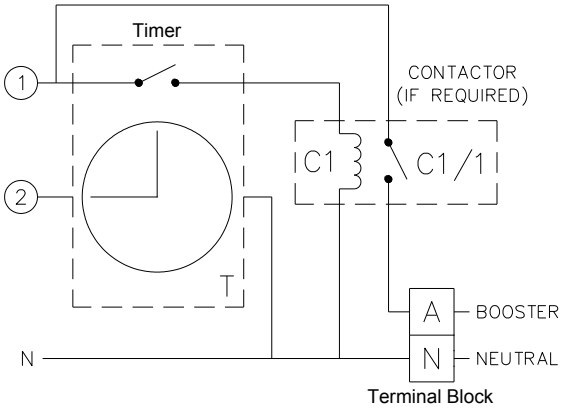
EXTENDED OFF-PEAK
POWER SUPPLY



EXTENDED OFF-PEAK
POWER SUPPLY
(timer with rechargeable battery)



TIMER WITHOUT CONTACTOR



TIMER WITH CONTACTOR (if required)

MULTIPLE INSTALLATIONS

A multiple installation of Rheem solar Hiline water heaters on a single manifold or multiple manifolds is possible, using the Rheem Equa-Flow® manifold system, where large volumes of hot water are required. It is recommended the electrical heating units of Rheem solar Hiline water heaters installed in a multiple installation, not be connected to a power supply. Rheem heavy duty water heaters should be installed in series with the solar water heaters to boost the water temperature during periods of poor or no solar gain.

The cold water and hot water manifolds must be designed to balance the flow from each solar storage tank. To achieve this, there are basic installation requirements and principles which must be followed:

1. The maximum number of solar storage tanks in a bank should be 8, however several banks of solar storage tanks can be installed.

2. The hot water line from the manifold must leave from the opposite end to which the cold water line enters the manifold.

3. The solar storage tanks must be of the same model.

4. The cold water line, cold and hot water headers and hot water line must be sized to meet the requirements of both AS/NZS 3500.4 and the application.

5. A non return valve, isolation valve and if required a pressure limiting valve and expansion control valve, must be installed on the cold water line to the system.

6. A full flow gate valve or ball valve (not stop taps, as used on a single solar storage tank installation) must be installed on both the cold water branch and hot water branch of each solar storage tank.

7. Non return valves or pressure limiting valves **must not** be installed on the branch lines to the solar storage tanks.

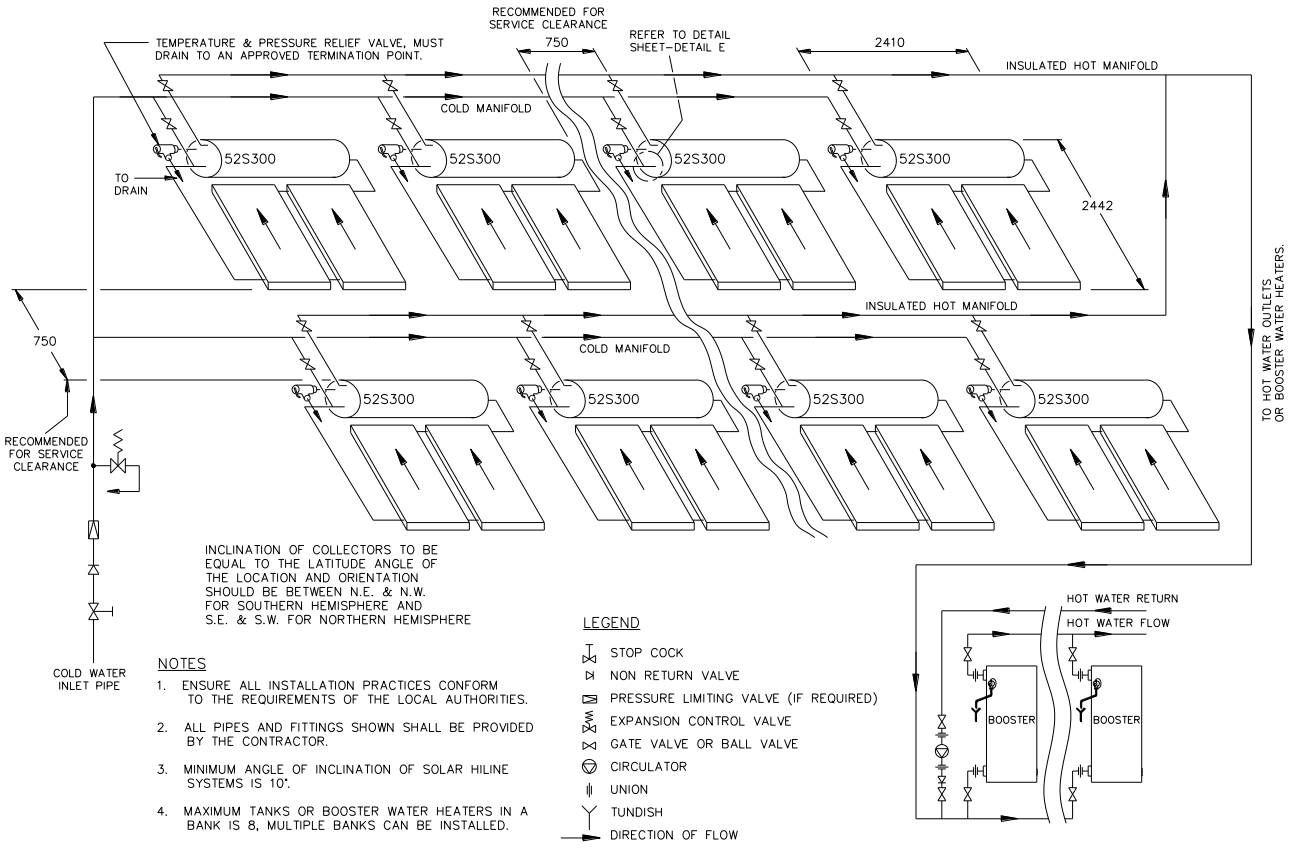
8. All fittings, valves and branch lines must be matched sets all the way along the manifold.

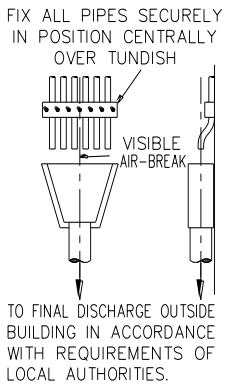
9. Sufficient space must be left to enable access, servicing or removal of each solar storage tank.

10. The temperature pressure relief valve drain line from each solar storage tank can terminate at a common tundish (funnel) with a visible air break at each drain discharge point (refer to the diagram on page 37 and to “Relief Drain Line” on page 32).

Refer to the diagram on page 37 for installation and plant layout details.

RHEEM COMMERCIAL SOLAR HILINE – DOUBLE ARRAY


RECOMMENDED FOR SERVICE CLEARANCE
750
REFER TO DETAIL SHEET–DETAIL E
2410
TEMPERATURE & PRESSURE RELIEF VALVE, MUST DRAIN TO AN APPROVED TERMINATION POINT.
INSULATED HOT MANIFOLD
COLD MANIFOLD
52S300
TO DRAIN
2442
INSULATED HOT MANIFOLD
750
COLD MANIFOLD
RECOMMENDED FOR SERVICE CLEARANCE
TO HOT WATER OUTLETS OR BOOSTER WATER HEATERS.
INCLINATION OF COLLECTORS TO BE EQUAL TO THE LATITUDE ANGLE OF THE LOCATION AND ORIENTATION SHOULD BE BETWEEN N.E. & N.W. FOR SOUTHERN HEMISPHERE AND S.E. & S.W. FOR NORTHERN HEMISPHERE
COLD WATER INLET PIPE
NOTES
1. ENSURE ALL INSTALLATION PRACTICES CONFORM TO THE REQUIREMENTS OF THE LOCAL AUTHORITIES.
2. ALL PIPES AND FITTINGS SHOWN SHALL BE PROVIDED BY THE CONTRACTOR.
3. MINIMUM ANGLE OF INCLINATION OF SOLAR HILINE SYSTEMS IS 10°.
4. MAXIMUM TANKS OR BOOSTER WATER HEATERS IN A BANK IS 8, MULTIPLE BANKS CAN BE INSTALLED.
LEGEND
STOP COCK
NON RETURN VALVE
PRESSURE LIMITING VALVE (IF REQUIRED)
EXPANSION CONTROL VALVE
GATE VALVE OR BALL VALVE
CIRCULATOR
UNION
TUNDISH
DIRECTION OF FLOW
HOT WATER RETURN
HOT WATER FLOW
BOOSTER
BOOSTER


FIX ALL PIPES SECURELY IN POSITION CENTRALLY OVER TUNDISH
VISIBLE AIR-BREAK
TO FINAL DISCHARGE OUTSIDE BUILDING IN ACCORDANCE WITH REQUIREMENTS OF LOCAL AUTHORITIES.

TPR Valve Drain Line
Common Discharge Point

COMMISSIONING

TO FILL AND TURN ON THE WATER HEATER

The power supply to the solar storage tank must not be switched on until the water heater is filled with water and a satisfactory megger reading is obtained.

- Open all of the hot water taps in the house (don't forget the shower).
- Open the isolation valves fully on the cold and hot water branches to the water heater(s) in a bank.
- Open the cold water isolation valve fully on the cold water line to the water heater(s).

  Air will be forced out of the taps.
- Close each tap as water flows freely from it.
- Check the pipe work for leaks.
- Switch on the electrical supply at the isolating switch to the solar storage tank(s).
- Set the timer if one is installed (refer to "Booster Control" on page 33).

Explain to the householder or a responsible officer the functions and operation of the water heater and the timer if one is installed. Upon completion of the installation and commissioning of the water heater, leave this guide with the householder or responsible officer.

TO TURN OFF THE WATER HEATER

If it is necessary to turn off the water heater on completion of the installation, such as on a building site or where the premises is vacant, then:

- Switch off the electrical supply at the isolating switch to the solar storage tank(s).
- Close the cold water isolation valve at the inlet to the water heater(s) to shut down the entire system, or;
- Close the isolation valves on the cold and hot water branches to shut down an individual water heater in a bank.

DRAINING THE SOLAR COLLECTORS

⚠ **Warning:** Exercise care, as water discharged from the solar collector(s) may be of a very high temperature.

To drain the solar collector(s):

- Refer to "Flushing the Water Heater" on page 40 before commencing this procedure.
- Turn off the water heater (refer to "To Turn Off the Water Heater" on page 38).
- Close all hot water taps.
- Operate the relief valve release lever - do not let the lever snap back or you will damage the valve seat.

  Operating the lever will release the pressure in the water heater.
- From the bottom and top ends of the NPT 200 solar collector(s), unscrew and remove the end plugs.

  Water will now drain from the solar collector(s).

DRAINING THE WATER HEATER

⚠ **Warning:** Exercise care, as water discharged from the water heater may be of a very high temperature.

To drain the water heater:

- Refer to "Flushing the Water Heater" on page 40 before commencing this procedure.
- Turn off the water heater (refer to "To Turn Off the Water Heater" on page 38).
- Close all hot water taps.
- Operate the relief valve release lever - do not let the lever snap back or you will damage the valve seat.

  Operating the lever will release the pressure in the water heater.
- Undo the union at the cold water inlet to the Sunstat valve and attach a hose.

  Let the other end of the hose go to a drain.
- Operate the relief valve again.

  This will let air into the water heater and allow the water to drain through the hose.

FLUSHING THE WATER HEATER

It may be necessary to flush the storage tank and solar collector(s) if there is sediment in the water supply. This should be conducted in the morning, within three hours of sunrise, when the water temperature inside the solar collector(s) is lower.

- Open a hot water tap and allow the water to run for five minutes immediately prior to flushing or draining the solar storage tank and / or solar collector(s).

  This will assist in the transfer of any high temperature water in the solar collector(s) to the solar storage tank.

- Close the hot water tap.

⚠ **Warning:** Exercise care to avoid splashing of water, as water discharged from the solar collector(s) and solar storage tank may be of a very high temperature.

Note: The water discharged from the water heater may contain sediments and should be diverted away from any rainwater tank connected to the roof.

To flush the storage tank and solar collector(s):

- Turn off the water heater (refer to "To Turn Off The Water Heater" on page 38).
- Operate the relief valve lever – do not let the lever snap back or you will damage the valve seat.

  Operating the lever will release the pressure in the water heater.

- From the bottom and top ends of the NPT 200 solar collector(s), unscrew and remove the end plugs.
- Open the cold water isolation valve to the water heater.
- Allow water to flow from the solar collector(s) until it is clear of any sediment.
- When satisfied the solar storage tank and solar collector(s) are flushed, close the cold water isolation valve to the water heater and reconnect all fittings to their original location.
- Open the cold water isolation valve to the water heater fully, check fittings for leaks and switch on the power.

It is recommended to flush the solar storage tank and solar collector(s) every five years. This will assist in keeping the solar collector(s), solar cold pipe and solar hot pipe clear of sediment.

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RHEEM SOLAR HILINE WATER HEATER WARRANTY – AUSTRALIA ONLY –

SOLAR HILINE WATER HEATER MODELS 52S160, 52S300

1. THE RHEEM WARRANTY – GENERAL

1.1 This warranty is given by Rheem Australia Pty Limited ABN 21 098 823 511 of 1 Alan Street, Rydalmere New South Wales.

1.2 Rheem offer a trained and qualified national service network who will repair or replace components at the address of the water heater subject to the terms of the Rheem warranty. Rheem Service, in addition can provide preventative maintenance and advice on the operation of your water heater. The Rheem Service contact number is available 7 days a week on 131031 with Service personnel available to take your call from 8am to 8pm daily (hours subject to change).

1.3 For details about this warranty, you can contact us on 131031 or by email at warrantyenquiry@rheem.com.au (not for service bookings).

1.4 The terms of this warranty are set out in section 2 and apply to water heaters manufactured after 1st January 2012.

1.5 If a subsequent version of this warranty is published, the terms of that warranty will apply to water heaters manufactured after the date specified in the subsequent version.

2. TERMS OF THE RHEEM WARRANTY AND EXCLUSIONS TO IT

2.1 The decision of whether to repair or replace a faulty component is at Rheem's sole discretion.

2.2 If you require a call out and we find that the fault is not covered by the Rheem warranty, you are responsible for our standard call out charge. If you wish to have the relevant component repaired or replaced by Rheem, that service will be at your cost.

2.3 Where a failed component or cylinder is replaced under this warranty, the balance of the original warranty period will remain effective. The replacement does not carry a new Rheem warranty.

2.4 Where the water heater is installed outside the boundaries of a metropolitan area as defined by Rheem or further than 25 km from either a regional Rheem branch office or an Accredited Rheem Service Agent's office, the cost of transport, insurance and travelling between the nearest branch office or Rheem Accredited Service Agent's office and the installed site shall be the owner's responsibility.

2.5 Where the water heater is installed in a position that does not allow safe or ready access, the cost of that access, including the cost of additional materials handling and/or safety equipment, shall be the owner's responsibility. In other words, the cost of dismantling or removing cupboards, doors or walls and the cost of any special equipment to bring the water heater to floor or ground level or to a serviceable position is not covered by this warranty.

2.6 This warranty only applies to the original and genuine Rheem water heater in its original installed location and any genuine Rheem replacement parts.

2.7 The Rheem warranty does not cover faults that are a result of:

a) Accidental damage to the water heater or any component (for example: (i) Acts of God such as floods, storms, fires, lightning strikes and the like; and (ii) third party acts or omissions).

b) Misuse or abnormal use of the water heater.

c) Installation not in accordance with the Owner's Guide and Installation Instructions or with relevant statutory and local requirements in the State or Territory in which the water heater is installed.

d) Connection at any time to a water supply that does not comply with the water supply guidelines as outlined in the Owner's Guide and Installation Instructions.

e) Repairs, attempts to repair or modifications to the water heater by a person other than Rheem Service or a Rheem Accredited Service Agent.

f) Faulty plumbing or faulty power supply.

g) Failure to maintain the water heater in accordance with the Owner's Guide and Installation Instructions.

h) Transport damage.

i) Fair wear and tear from adverse conditions (for example, corrosion).

j) Cosmetic defects.

k) Breakage of collector glass for any reason including hail damage (we suggest that the collector glass be covered by your home insurance policy).

l) Ice formation in the waterways of a direct open circuit thermosiphon system.

2.8 Subject to any statutory provisions to the contrary, this warranty excludes any and all claims for damage to furniture, carpet, walls, foundations or any other consequential loss either directly or indirectly due to leakage from the water heater, or due to leakage from fittings and/ or pipe work of metal, plastic or other materials caused by water temperature, workmanship or other modes of failure.

2.9 If the water heater is not sized to supply the hot water demand in accordance with the guidelines in the Rheem water heater literature, any resultant fault will not be covered by the Rheem warranty.

RHEEM SOLAR HILINE WATER HEATER WARRANTY – AUSTRALIA ONLY –

SOLAR HILINE WATER HEATER MODELS 52S160, 52S300

3. WHAT IS COVERED BY THE RHEEM WARRANTY FOR THE WATER HEATERS DETAILED IN THIS DOCUMENT

3.1 Rheem will repair or replace a faulty component of your water heater if it fails to operate in accordance with its specifications as follows:

What components are covered	The period in which the fault must appear in order to be covered	What coverage you receive
All components	Year 1	Repair and/or replacement of the faulty component, free of charge, including labour.
The cylinder (if the water heater is installed in a single-family domestic dwelling)	Years 2 & 3	Repair and / or replacement of the cylinder, free of charge, including labour.
	Years 4 & 5	Replacement cylinder, free of charge. Installation and repair labour costs are the responsibility of the owner.
The cylinder (if the water heater is not installed in a single-family domestic dwelling)	Years 2 & 3	Replacement cylinder, free of charge. Installation and repair labour costs are the responsibility of the owner.
The solar collector (all installations)	Years 2 to 5	Replacement solar collector, free of charge. Installation and repair labour costs are the responsibility of the owner.

3.2 If a government rebate has been received for the water heater, the duration of the protection afforded by this warranty may be greater than what is set out above. Please call 131031 for details.

4. ENTITLEMENT TO MAKE A CLAIM UNDER THIS WARRANTY

4.1 To be entitled to make a claim under this warranty you need to:

a) Be the owner of the water heater or have consent of the owner to act on their behalf.

b) Contact Rheem Service without undue delay after detection of the defect and, in any event, within the applicable warranty period.

4.2 You are not entitled to make a claim under this warranty if your water heater:

a) Does not have its original serial numbers or rating labels.

b) Is not installed in Australia.

5. HOW TO MAKE A CLAIM UNDER THIS WARRANTY

5.1 If you wish to make a claim under this warranty, you need to:

a) Contact Rheem on 131031 and provide owner's details, address of the water heater, a contact number and date of installation of the water heater or if that's unavailable, the date of manufacture and serial number (from the rating label on the water heater).

b) Rheem will arrange for the water heater to be tested and assessed on-site.

c) If Rheem determines that you have a valid warranty claim, Rheem will repair or replace the water heater in accordance with this warranty.

5.2 Any expenses incurred in the making of a claim under this warranty will be borne by you.

6. THE AUSTRALIAN CONSUMER LAW

6.1 Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

6.2 The Rheem warranty (set out above) is in addition to any rights and remedies that you may have under the Australian Consumer Law.

RHEEM AUSTRALIA PTY LTD, A.B.N. 21 098 823 511, www.rheem.com.au
For Service Telephone 131 031 AUSTRALIA or 0800 657 335 NEW ZEALAND

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